SEQUENCE LISTING

<110> Kawasaki, Hiroaki
Graybiel, Ann
Housman, David

<120> Genes Integrating Signal Transduction Pathways

<130> MIT-103

<140> US 09/422,999
<141> 1999-10-22

<150> US 60/105,507
<151> 1998-10-23

<150> US 60/108,685
<151> 1998-11-16

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<170> PatentIn version 3.3

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gctctgagag tgtaacttgg gtctagccca ctggcaccgg cagcc atg gcg agc act 177
Met Ala Ser Thr
1

ctg gac ctg gac aag ggt tgc acc gtg gag gag ctg ctc cgt ggc tgt 225
Leu Asp Leu Asp Lys Gly Cys Thr Val Glu Glu Leu Leu Arg Gly Cys
5 10 15 20

atc gaa gcc ttt gat gac tct gga aag gtg cga gat cca cag cta gtg 273
Ile Glu Ala Phe Asp Asp Ser Gly Lys Val Arg Asp Pro Gln Leu Val
25 30 35

cgc atg ttt ctc atg atg cac ccc tgg tac ata cct tcc tct cag ctg 321
Arg Met Phe Leu Met Met His Pro Trp Tyr Ile Pro Ser Ser Gln Leu
40 45 50

gct tcg aaa ctg ctc cac ttc tat cag caa tcc cgg aag gac aac tcc 369
Ala Ser Lys Leu Leu His Phe Tyr Gln Gln Ser Arg Lys Asp Asn Ser
55 60 65

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aat tcc cta cag gtg aaa acc tgt cac ctg gtc agg tac tgg gtc tca      417
Asn Ser Leu Gln Val Lys Thr Cys His Leu Val Arg Tyr Trp Val Ser
    70                  75                  80

gcc ttc cca gca gag ttc gac ttg aac cca gag ctg gct gaa ccg atc      465
Ala Phe Pro Ala Glu Phe Asp Leu Asn Pro Glu Leu Ala Glu Pro Ile
85                  90                  95                  100

aag gag ctg aag gct ctg tta gac caa gaa gga aac cgc agg cac agc      513
Lys Glu Leu Lys Ala Leu Leu Asp Gln Glu Gly Asn Arg Arg His Ser
                105                 110                 115

agc ctc atc gac atc gag agt gtc ccc acc tac aag tgg aag cgg cag      561
Ser Leu Ile Asp Ile Glu Ser Val Pro Thr Tyr Lys Trp Lys Arg Gln
            120                 125                 130

gtg acc cag cgg aac cct gtg gaa cag aaa aag cgc aag atg tcc ctg      609
Val Thr Gln Arg Asn Pro Val Glu Gln Lys Lys Arg Lys Met Ser Leu
        135                 140                 145

ttg ttt gat cac ttg gag cct atg gaa ctg gca gaa cat ctc acc tac      657
Leu Phe Asp His Leu Glu Pro Met Glu Leu Ala Glu His Leu Thr Tyr
    150                 155                 160

ttg gag tat cgg tcc ttc tgc aag atc ctg ttc cag gac tat cac agc      705
Leu Glu Tyr Arg Ser Phe Cys Lys Ile Leu Phe Gln Asp Tyr His Ser
165                 170                 175                 180

ttt gtg act cat ggc tgc act gta gac aat ccg gtc ctg gag cga ttc      753
Phe Val Thr His Gly Cys Thr Val Asp Asn Pro Val Leu Glu Arg Phe
                185                 190                 195

atc tcc ctc ttc aac agt gtc tct cag tgg gtc caa ctc atg atc ctc      801
Ile Ser Leu Phe Asn Ser Val Ser Gln Trp Val Gln Leu Met Ile Leu
            200                 205                 210

agc aag ccc aca gcc acg cag cgg gcg ctg gtc atc aca cat ttc gtg      849
Ser Lys Pro Thr Ala Thr Gln Arg Ala Leu Val Ile Thr His Phe Val
        215                 220                 225

cat gtg gca gag aag ctg ctg cag ctg cag aac ttc aac acg ttg atg      897
His Val Ala Glu Lys Leu Leu Gln Leu Gln Asn Phe Asn Thr Leu Met
    230                 235                 240

gcc gtc gtg gga ggc ctg agc cac agc tcc atc tca cgc ctc aag gag      945
Ala Val Val Gly Gly Leu Ser His Ser Ser Ile Ser Arg Leu Lys Glu
245                 250                 255                 260

acc cac agc cat gtc agc cct gac acc atc aag ctc tgg gaa ggt ctg      993
Thr His Ser His Val Ser Pro Asp Thr Ile Lys Leu Trp Glu Gly Leu
                265                 270                 275

aca gaa cta gtg aca gct act ggc aac tac agc aac tac cgg cga agg     1041
Thr Glu Leu Val Thr Ala Thr Gly Asn Tyr Ser Asn Tyr Arg Arg Arg
            280                 285                 290
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ctg gcg gcc tgc gtg ggc ttc cgc ttt cct atc ctg ggt gtg cac ctc     1089
Leu Ala Ala Cys Val Gly Phe Arg Phe Pro Ile Leu Gly Val His Leu
        295                 300                 305

aag gat cta gtg gct ctg cag ctg gct ctg cct gac tgg ctg gac cca     1137
Lys Asp Leu Val Ala Leu Gln Leu Ala Leu Pro Asp Trp Leu Asp Pro
    310                 315                 320

ggt cgg acc cgg ctc aat gga gcc aag atg agg cag ctt ttc agc att     1185
Gly Arg Thr Arg Leu Asn Gly Ala Lys Met Arg Gln Leu Phe Ser Ile
325                 330                 335                 340

ctg gag gag ttg gct atg gtg acc agt ctt cga cca cca gtg caa gcc     1233
Leu Glu Glu Leu Ala Met Val Thr Ser Leu Arg Pro Pro Val Gln Ala
                345                 350                 355

aac ccc gac ctg ctg agt ctg ctc acg gtg tcc ctg gac cag tat cag     1281
Asn Pro Asp Leu Leu Ser Leu Leu Thr Val Ser Leu Asp Gln Tyr Gln
            360                 365                 370

acg gag gat gag ctg tat cag ctc tct ctg cag cga gag cca cgt tcc     1329
Thr Glu Asp Glu Leu Tyr Gln Leu Ser Leu Gln Arg Glu Pro Arg Ser
        375                 380                 385

aag tca tcg ccc acc agc ccc acc agc tgc acc ccg cct ccc cgg ccg     1377
Lys Ser Ser Pro Thr Ser Pro Thr Ser Cys Thr Pro Pro Pro Arg Pro
    390                 395                 400

cct gtg ctg gaa gag tgg acc tca gtt gcc aag cct aag ctg gac caa     1425
Pro Val Leu Glu Glu Trp Thr Ser Val Ala Lys Pro Lys Leu Asp Gln
405                 410                 415                 420

gcc ttg gtg gcc gag cac att gag aag atg gtg gag tct gtg ttc cgg     1473
Ala Leu Val Ala Glu His Ile Glu Lys Met Val Glu Ser Val Phe Arg
                425                 430                 435

aac ttt gac gtt gat ggg gac ggt cac atc tcc cag gag gag ttc cag     1521
Asn Phe Asp Val Asp Gly Asp Gly His Ile Ser Gln Glu Glu Phe Gln
            440                 445                 450

atc atc cgg ggc aac ttc cct tat ctc agc gcc ttt ggg gac ttg gac     1569
Ile Ile Arg Gly Asn Phe Pro Tyr Leu Ser Ala Phe Gly Asp Leu Asp
        455                 460                 465

cag aac cag gat ggc tgc atc agc cgg gag gag atg att tcc tac ttc     1617
Gln Asn Gln Asp Gly Cys Ile Ser Arg Glu Glu Met Ile Ser Tyr Phe
    470                 475                 480

ctg cgc tcc agc tcc gtg ctg gga ggc cgc atg ggc ttc gta cac aac     1665
Leu Arg Ser Ser Ser Val Leu Gly Gly Arg Met Gly Phe Val His Asn
485                 490                 495                 500

ttc cag gag agt aac tcg cta agg ccg gtc gcc tgc cga cac tgc aaa     1713
Phe Gln Glu Ser Asn Ser Leu Arg Pro Val Ala Cys Arg His Cys Lys
                505                 510                 515

gct ctg atc ctg ggc atc tac aag cag ggc ctc aaa tgt aga gct tgt     1761
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Ala Leu Ile Leu Gly Ile Tyr Lys Gln Gly Leu Lys Cys Arg Ala Cys
            520                 525                 530

ggt gtg aac tgc cac aag cag tgc aaa gac cga ctg tca gtg gaa tgt     1809
Gly Val Asn Cys His Lys Gln Cys Lys Asp Arg Leu Ser Val Glu Cys
        535                 540                 545

cgc cgc cgc gcc cag agt gtg agc ctg gag ggc tct gca ccc tct ccc     1857
Arg Arg Arg Ala Gln Ser Val Ser Leu Glu Gly Ser Ala Pro Ser Pro
    550                 555                 560

tca ccc aca cat acc cac cat cgg gcc ttc agc ttc tcc ctg cct cgc     1905
Ser Pro Thr His Thr His His Arg Ala Phe Ser Phe Ser Leu Pro Arg
565                 570                 575                 580

cca ggc agg cgc agc tct cgg cct cca gag atc cgt gaa gag gag gtg     1953
Pro Gly Arg Arg Ser Ser Arg Pro Pro Glu Ile Arg Glu Glu Glu Val
                585                 590                 595

cag act gtg gaa gat ggt gtg ttc gac atc cac tta taagacgctg          1999
Gln Thr Val Glu Asp Gly Val Phe Asp Ile His Leu
            600                 605

tgactatcaa ggactcattc ctgccttgga gaaaagactt ggagcagagc agggagccag   2059

ggattctggg gcaggaggtt ggggctgaag gtgggggaag ttgaaggtgg catgcactga   2119

aaaaaaggcc agggctggtg tccctaaggt tgtacagact tctgtgaata tttgtatttt   2179

ccagatggaa taaaaaggcc cgaataatta acctcgaaaa aaaaaaaaaa aaaaaaaaaa   2239

aaaaaaaaaa a                                                       2250
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            20                  25                  30

Pro Gln Leu Val Arg Met Phe Leu Met Met His Pro Trp Tyr Ile Pro
        35                  40                  45

Ser Ser Gln Leu Ala Ser Lys Leu Leu His Phe Tyr Gln Gln Ser Arg
    50                  55                  60
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Lys Asp Asn Ser Asn Ser Leu Gln Val Lys Thr Cys His Leu Val Arg
65                  70                  75                  80

Tyr Trp Val Ser Ala Phe Pro Ala Glu Phe Asp Leu Asn Pro Glu Leu
                85                  90                  95

Ala Glu Pro Ile Lys Glu Leu Lys Ala Leu Leu Asp Gln Glu Gly Asn
            100                 105                 110

Arg Arg His Ser Ser Leu Ile Asp Ile Glu Ser Val Pro Thr Tyr Lys
        115                 120                 125

Trp Lys Arg Gln Val Thr Gln Arg Asn Pro Val Glu Gln Lys Lys Arg
    130                 135                 140

Lys Met Ser Leu Leu Phe Asp His Leu Glu Pro Met Glu Leu Ala Glu
145                 150                 155                 160

His Leu Thr Tyr Leu Glu Tyr Arg Ser Phe Cys Lys Ile Leu Phe Gln
                165                 170                 175

Asp Tyr His Ser Phe Val Thr His Gly Cys Thr Val Asp Asn Pro Val
            180                 185                 190

Leu Glu Arg Phe Ile Ser Leu Phe Asn Ser Val Ser Gln Trp Val Gln
        195                 200                 205

Leu Met Ile Leu Ser Lys Pro Thr Ala Thr Gln Arg Ala Leu Val Ile
    210                 215                 220

Thr His Phe Val His Val Ala Glu Lys Leu Leu Gln Leu Gln Asn Phe
225                 230                 235                 240

Asn Thr Leu Met Ala Val Val Gly Gly Leu Ser His Ser Ser Ile Ser
                245                 250                 255

Arg Leu Lys Glu Thr His Ser His Val Ser Pro Asp Thr Ile Lys Leu
            260                 265                 270

Trp Glu Gly Leu Thr Glu Leu Val Thr Ala Thr Gly Asn Tyr Ser Asn
        275                 280                 285

Tyr Arg Arg Arg Leu Ala Ala Cys Val Gly Phe Arg Phe Pro Ile Leu
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    290                 295                 300

Gly Val His Leu Lys Asp Leu Val Ala Leu Gln Leu Ala Leu Pro Asp
305                 310                 315                 320

Trp Leu Asp Pro Gly Arg Thr Arg Leu Asn Gly Ala Lys Met Arg Gln
                325                 330                 335

Leu Phe Ser Ile Leu Glu Glu Leu Ala Met Val Thr Ser Leu Arg Pro
            340                 345                 350

Pro Val Gln Ala Asn Pro Asp Leu Leu Ser Leu Leu Thr Val Ser Leu
        355                 360                 365

Asp Gln Tyr Gln Thr Glu Asp Glu Leu Tyr Gln Leu Ser Leu Gln Arg
    370                 375                 380

Glu Pro Arg Ser Lys Ser Ser Pro Thr Ser Pro Thr Ser Cys Thr Pro
385                 390                 395                 400

Pro Pro Arg Pro Pro Val Leu Glu Glu Trp Thr Ser Val Ala Lys Pro
                405                 410                 415

Lys Leu Asp Gln Ala Leu Val Ala Glu His Ile Glu Lys Met Val Glu
            420                 425                 430

Ser Val Phe Arg Asn Phe Asp Val Asp Gly Asp Gly His Ile Ser Gln
        435                 440                 445

Glu Glu Phe Gln Ile Ile Arg Gly Asn Phe Pro Tyr Leu Ser Ala Phe
    450                 455                 460

Gly Asp Leu Asp Gln Asn Gln Asp Gly Cys Ile Ser Arg Glu Glu Met
465                 470                 475                 480

Ile Ser Tyr Phe Leu Arg Ser Ser Ser Val Leu Gly Gly Arg Met Gly
                485                 490                 495

Phe Val His Asn Phe Gln Glu Ser Asn Ser Leu Arg Pro Val Ala Cys
            500                 505                 510

Arg His Cys Lys Ala Leu Ile Leu Gly Ile Tyr Lys Gln Gly Leu Lys
        515                 520                 525
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Cys Arg Ala Cys Gly Val Asn Cys His Lys Gln Cys Lys Asp Arg Leu
    530                 535                 540

Ser Val Glu Cys Arg Arg Arg Ala Gln Ser Val Ser Leu Glu Gly Ser
545                 550                 555                 560

Ala Pro Ser Pro Ser Pro Thr His Thr His His Arg Ala Phe Ser Phe
                565                 570                 575

Ser Leu Pro Arg Pro Gly Arg Arg Ser Ser Arg Pro Pro Glu Ile Arg
            580                 585                 590

Glu Glu Glu Val Gln Thr Val Glu Asp Gly Val Phe Asp Ile His Leu
        595                 600                 605
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<210> 3
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<222> (161)..(1987)

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ggagcgcagc ctgggcccag cccaccccgc gccggcggcc atg gca ggc acc ctg      175
                                              Met Ala Gly Thr Leu
                                              1               5

gac ctg gac aag ggc tgc acg gtg gag gag ctg ctc cgc ggg tgc atc      223
Asp Leu Asp Lys Gly Cys Thr Val Glu Glu Leu Leu Arg Gly Cys Ile
                10                  15                  20

gaa gcc ttc gat gac tcc ggg aag gtg cgg gac ccg cag ctg gtg cgc      271
Glu Ala Phe Asp Asp Ser Gly Lys Val Arg Asp Pro Gln Leu Val Arg
            25                  30                  35

atg ttc ctc atg atg cac ccc tgg tac atc ccc tcc tct cag ctg gcg      319
Met Phe Leu Met Met His Pro Trp Tyr Ile Pro Ser Ser Gln Leu Ala
        40                  45                  50

gcc aag ctg ctc cac atc tac caa caa tcc cgg aag gac aac tcc aat      367
Ala Lys Leu Leu His Ile Tyr Gln Gln Ser Arg Lys Asp Asn Ser Asn
    55                  60                  65
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tcc ctg cag gtg aaa acg tgc cac ctg gtc agg tac tgg atc tcc gcc      415
Ser Leu Gln Val Lys Thr Cys His Leu Val Arg Tyr Trp Ile Ser Ala
70                  75                  80                  85

ttc cca gcg gag ttt gac ttg aac ccg gag ttg gct gag cag atc aag      463
Phe Pro Ala Glu Phe Asp Leu Asn Pro Glu Leu Ala Glu Gln Ile Lys
                90                  95                  100

gag ctg aag gct ctg cta gac caa gaa ggg aac cga cgg cac agc agc      511
Glu Leu Lys Ala Leu Leu Asp Gln Glu Gly Asn Arg Arg His Ser Ser
            105                 110                 115

cta atc gac ata gac agc gtc cct acc tac aag tgg aag cgg cag gtg      559
Leu Ile Asp Ile Asp Ser Val Pro Thr Tyr Lys Trp Lys Arg Gln Val
        120                 125                 130

act cag cgg aac cct gtg gga cag aaa aag cgc aag atg tcc ctg ttg      607
Thr Gln Arg Asn Pro Val Gly Gln Lys Lys Arg Lys Met Ser Leu Leu
    135                 140                 145

ttt gac cac ctg gag ccc atg gag ctg gcg gag cat ctc acc tac ttg      655
Phe Asp His Leu Glu Pro Met Glu Leu Ala Glu His Leu Thr Tyr Leu
150                 155                 160                 165

gag tat cgc tcc ttc tgc aag atc ctg ttt cag gac tat cac agt ttc      703
Glu Tyr Arg Ser Phe Cys Lys Ile Leu Phe Gln Asp Tyr His Ser Phe
                170                 175                 180

gtg act cat ggc tgc act gtg gac aac ccc gtc ctg gag cgg ttc atc      751
Val Thr His Gly Cys Thr Val Asp Asn Pro Val Leu Glu Arg Phe Ile
            185                 190                 195

tcc ctc ttc aac agc gtc tca cag tgg gtg cag ctc atg atc ctc agc      799
Ser Leu Phe Asn Ser Val Ser Gln Trp Val Gln Leu Met Ile Leu Ser
        200                 205                 210

aaa ccc aca gcc ccg cag cgg gcc ctg gtc atc aca cac ttt gtc cac      847
Lys Pro Thr Ala Pro Gln Arg Ala Leu Val Ile Thr His Phe Val His
    215                 220                 225

gtg gcg gag aag ctg cta cag ctg cag aac ttc aac acg ctg atg gca      895
Val Ala Glu Lys Leu Leu Gln Leu Gln Asn Phe Asn Thr Leu Met Ala
230                 235                 240                 245

gtg gtc ggg ggc ctg agc cac agc tcc atc tcc cgc ctc aag gag acc      943
Val Val Gly Gly Leu Ser His Ser Ser Ile Ser Arg Leu Lys Glu Thr
                250                 255                 260

cac agc cac gtt agc cct gag acc atc aag ctc tgg gag ggt ctc acg      991
His Ser His Val Ser Pro Glu Thr Ile Lys Leu Trp Glu Gly Leu Thr
            265                 270                 275

gaa cta gtg acg gcg aca ggc aac tat ggc aac tac cgg cgt cgg ctg     1039
Glu Leu Val Thr Ala Thr Gly Asn Tyr Gly Asn Tyr Arg Arg Arg Leu
        280                 285                 290

gca gcc tgt gtg ggc ttc cgc ttc ccg atc ctg ggt gtg cac ctc aag     1087
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Ala Ala Cys Val Gly Phe Arg Phe Pro Ile Leu Gly Val His Leu Lys
    295                 300                 305

gac ctg gtg gcc ctg cag ctg gca ctg cct gac tgg ctg gac cca gcc     1135
Asp Leu Val Ala Leu Gln Leu Ala Leu Pro Asp Trp Leu Asp Pro Ala
310                 315                 320                 325

cgg acc cgg ctc aac ggg gcc aag atg aag cag ctc ttt agc atc ctg     1183
Arg Thr Arg Leu Asn Gly Ala Lys Met Lys Gln Leu Phe Ser Ile Leu
                330                 335                 340

gag gag ctg gcc atg gtg acc agc ctg cgg cca cca gta cag gcc aac     1231
Glu Glu Leu Ala Met Val Thr Ser Leu Arg Pro Pro Val Gln Ala Asn
            345                 350                 355

ccc gac ctg ctg agc ctg ctc acg gtg tct ctg gat cag tat cag acg     1279
Pro Asp Leu Leu Ser Leu Leu Thr Val Ser Leu Asp Gln Tyr Gln Thr
        360                 365                 370

gag gat gag ctg tac cag ctg tcc ctg cag cgg gag ccg cgc tcc aag     1327
Glu Asp Glu Leu Tyr Gln Leu Ser Leu Gln Arg Glu Pro Arg Ser Lys
    375                 380                 385

tct tcg cca acc agc ccc acg agt tgc acc cca cca ccc cgg ccc ccg     1375
Ser Ser Pro Thr Ser Pro Thr Ser Cys Thr Pro Pro Pro Arg Pro Pro
390                 395                 400                 405

gta ttg gag gag tgg acc tcg gct gcc aaa ccc aag ctg gat cag gcc     1423
Val Leu Glu Glu Trp Thr Ser Ala Ala Lys Pro Lys Leu Asp Gln Ala
                410                 415                 420

ctc gtg gtg gag cac atc gag aag atg gtg gag tct gtg ttc cgg aac     1471
Leu Val Val Glu His Ile Glu Lys Met Val Glu Ser Val Phe Arg Asn
            425                 430                 435

ttt gac gtc gat ggg gat ggc cac atc tca cag gaa gaa ttc cag atc     1519
Phe Asp Val Asp Gly Asp Gly His Ile Ser Gln Glu Glu Phe Gln Ile
        440                 445                 450

atc cgt ggg aac ttc cct tac ctc agc gcc ttt ggg gac ctc gac cag     1567
Ile Arg Gly Asn Phe Pro Tyr Leu Ser Ala Phe Gly Asp Leu Asp Gln
    455                 460                 465

aac cag gat ggc tgc atc agc agg gag gag atg gtt tcc tat ttc ctg     1615
Asn Gln Asp Gly Cys Ile Ser Arg Glu Glu Met Val Ser Tyr Phe Leu
470                 475                 480                 485

cgc tcc agc tct gtg ttg ggg ggg cgc atg ggc ttc gta cac aac ttc     1663
Arg Ser Ser Ser Val Leu Gly Gly Arg Met Gly Phe Val His Asn Phe
                490                 495                 500

cag gag agc aac tcc ttg cgc ccc gtc gcc tgc cgc cac tgc aaa gcc     1711
Gln Glu Ser Asn Ser Leu Arg Pro Val Ala Cys Arg His Cys Lys Ala
            505                 510                 515

ctg atc ctg ggc atc tac aag cag ggc ctc aaa tgc cga gcc tgt gga     1759
Leu Ile Leu Gly Ile Tyr Lys Gln Gly Leu Lys Cys Arg Ala Cys Gly
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        520                 525                 530

gtg aac tgc cac aag cag tgc aag gat cgc ctg tca gtt gag tgt cgg     1807
Val Asn Cys His Lys Gln Cys Lys Asp Arg Leu Ser Val Glu Cys Arg
    535                 540                 545

cgc agg gcc cag agt gtg agc ctg gag ggg tct gca ccc tca ccc tca     1855
Arg Arg Ala Gln Ser Val Ser Leu Glu Gly Ser Ala Pro Ser Pro Ser
550                 555                 560                 565

ccc atg cac agc cac cat cac cgc gcc ttc agc ttc tct ctg ccc cgc     1903
Pro Met His Ser His His His Arg Ala Phe Ser Phe Ser Leu Pro Arg
                570                 575                 580

cct ggc agg cga ggc tcc agg cct cca gag atc cgt gag gag gag gta     1951
Pro Gly Arg Arg Gly Ser Arg Pro Pro Glu Ile Arg Glu Glu Glu Val
            585                 590                 595

cag acg gtg gag gat ggg gtg ttt gac atc cac ttg taatagatgc          1997
Gln Thr Val Glu Asp Gly Val Phe Asp Ile His Leu
        600                 605

tgtggttgga tcaaggactc attcctgcct tggagaaaat acttcaacca gagcagggag   2057

cctgggggtg tcggggcagg aggctgggga tgggggtggg atatgagggt ggcatgcagc   2117

tgagggcagg gccagggctg gtgtccctaa ggttgtacag actcttgtga atatttgtat   2177

tttccagatg gaataaaaag gcccgtgtaa ttaaccttca aaaaaaaaaa aaaaaaaaa    2236
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<212> PRT
<213> Homo sapiens

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Leu Arg Gly Cys Ile Glu Ala Phe Asp Asp Ser Gly Lys Val Arg Asp
            20                  25                  30

Pro Gln Leu Val Arg Met Phe Leu Met Met His Pro Trp Tyr Ile Pro
        35                  40                  45

Ser Ser Gln Leu Ala Ala Lys Leu Leu His Ile Tyr Gln Gln Ser Arg
    50                  55                  60

Lys Asp Asn Ser Asn Ser Leu Gln Val Lys Thr Cys His Leu Val Arg
65                  70                  75                  80
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Tyr Trp Ile Ser Ala Phe Pro Ala Glu Phe Asp Leu Asn Pro Glu Leu
                85                  90                  95

Ala Glu Gln Ile Lys Glu Leu Lys Ala Leu Leu Asp Gln Glu Gly Asn
            100                 105                 110

Arg Arg His Ser Ser Leu Ile Asp Ile Asp Ser Val Pro Thr Tyr Lys
        115                 120                 125

Trp Lys Arg Gln Val Thr Gln Arg Asn Pro Val Gly Gln Lys Lys Arg
    130                 135                 140

Lys Met Ser Leu Leu Phe Asp His Leu Glu Pro Met Glu Leu Ala Glu
145                 150                 155                 160

His Leu Thr Tyr Leu Glu Tyr Arg Ser Phe Cys Lys Ile Leu Phe Gln
                165                 170                 175

Asp Tyr His Ser Phe Val Thr His Gly Cys Thr Val Asp Asn Pro Val
            180                 185                 190

Leu Glu Arg Phe Ile Ser Leu Phe Asn Ser Val Ser Gln Trp Val Gln
        195                 200                 205

Leu Met Ile Leu Ser Lys Pro Thr Ala Pro Gln Arg Ala Leu Val Ile
    210                 215                 220

Thr His Phe Val His Val Ala Glu Lys Leu Leu Gln Leu Gln Asn Phe
225                 230                 235                 240

Asn Thr Leu Met Ala Val Val Gly Gly Leu Ser His Ser Ser Ile Ser
                245                 250                 255

Arg Leu Lys Glu Thr His Ser His Val Ser Pro Glu Thr Ile Lys Leu
            260                 265                 270

Trp Glu Gly Leu Thr Glu Leu Val Thr Ala Thr Gly Asn Tyr Gly Asn
        275                 280                 285

Tyr Arg Arg Arg Leu Ala Ala Cys Val Gly Phe Arg Phe Pro Ile Leu
    290                 295                 300
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Gly Val His Leu Lys Asp Leu Val Ala Leu Gln Leu Ala Leu Pro Asp
305                 310                 315                 320

Trp Leu Asp Pro Ala Arg Thr Arg Leu Asn Gly Ala Lys Met Lys Gln
                325                 330                 335

Leu Phe Ser Ile Leu Glu Glu Leu Ala Met Val Thr Ser Leu Arg Pro
            340                 345                 350

Pro Val Gln Ala Asn Pro Asp Leu Leu Ser Leu Leu Thr Val Ser Leu
        355                 360                 365

Asp Gln Tyr Gln Thr Glu Asp Glu Leu Tyr Gln Leu Ser Leu Gln Arg
    370                 375                 380

Glu Pro Arg Ser Lys Ser Ser Pro Thr Ser Pro Thr Ser Cys Thr Pro
385                 390                 395                 400

Pro Pro Arg Pro Pro Val Leu Glu Glu Trp Thr Ser Ala Ala Lys Pro
                405                 410                 415

Lys Leu Asp Gln Ala Leu Val Val Glu His Ile Glu Lys Met Val Glu
            420                 425                 430

Ser Val Phe Arg Asn Phe Asp Val Asp Gly Asp Gly His Ile Ser Gln
        435                 440                 445

Glu Glu Phe Gln Ile Ile Arg Gly Asn Phe Pro Tyr Leu Ser Ala Phe
    450                 455                 460

Gly Asp Leu Asp Gln Asn Gln Asp Gly Cys Ile Ser Arg Glu Glu Met
465                 470                 475                 480

Val Ser Tyr Phe Leu Arg Ser Ser Ser Val Leu Gly Gly Arg Met Gly
                485                 490                 495

Phe Val His Asn Phe Gln Glu Ser Asn Ser Leu Arg Pro Val Ala Cys
            500                 505                 510

Arg His Cys Lys Ala Leu Ile Leu Gly Ile Tyr Lys Gln Gly Leu Lys
        515                 520                 525

Cys Arg Ala Cys Gly Val Asn Cys His Lys Gln Cys Lys Asp Arg Leu
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    530                 535                 540

Ser Val Glu Cys Arg Arg Arg Ala Gln Ser Val Ser Leu Glu Gly Ser
545                 550                 555                 560

Ala Pro Ser Pro Ser Pro Met His Ser His His His Arg Ala Phe Ser
                565                 570                 575

Phe Ser Leu Pro Arg Pro Gly Arg Arg Gly Ser Arg Pro Pro Glu Ile
            580                 585                 590

Arg Glu Glu Glu Val Gln Thr Val Glu Asp Gly Val Phe Asp Ile His
        595                 600                 605

Leu
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gcggccgagg gatgcgccgc tcccggccga gccgatccca ccgctccagg tgagacggct    120

ccaggggcgc agagagccgc ggcc atg gga acc ctg ggc aag gcg aga gag       171
                           Met Gly Thr Leu Gly Lys Ala Arg Glu
                           1               5

gct ccg cgg aaa cct tgc cat ggc tcc aga gct ggc ccc aaa gga aga      219
Ala Pro Arg Lys Pro Cys His Gly Ser Arg Ala Gly Pro Lys Gly Arg
10                  15                  20                  25

cta gag gcc aaa tca acc aac agt cct ctc cct gcc cag ccc agc ttg      267
Leu Glu Ala Lys Ser Thr Asn Ser Pro Leu Pro Ala Gln Pro Ser Leu
                30                  35                  40

gcc cag atc acc cag ttc cga atg atg gtg tcc ctg gga cat ctg gcc      315
Ala Gln Ile Thr Gln Phe Arg Met Met Val Ser Leu Gly His Leu Ala
            45                  50                  55

aaa gga gcc agc ctg gat gat ctt att gac agc tgc att caa tct ttc      363
Lys Gly Ala Ser Leu Asp Asp Leu Ile Asp Ser Cys Ile Gln Ser Phe
        60                  65                  70
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gat gca gat gga aac ctg tgt cga agt aac cag ctg tta caa gtc atg      411
Asp Ala Asp Gly Asn Leu Cys Arg Ser Asn Gln Leu Leu Gln Val Met
    75                  80                  85

cta acc atg cac cga atc atc atc tcc tcg gcc gag ctg ctg caa aaa      459
Leu Thr Met His Arg Ile Ile Ile Ser Ser Ala Glu Leu Leu Gln Lys
90                  95                  100                 105

ctc atg aat cta tat aag gac gcc ctg gaa aag aat tct cca gga att      507
Leu Met Asn Leu Tyr Lys Asp Ala Leu Glu Lys Asn Ser Pro Gly Ile
                110                 115                 120

tgc ttg aag atc tgc tat ttt gtc agg tat tgg ata aca gaa ttc tgg      555
Cys Leu Lys Ile Cys Tyr Phe Val Arg Tyr Trp Ile Thr Glu Phe Trp
            125                 130                 135

atc atg ttc aaa atg gat gcc agc ttg acc agc acc atg gaa gag ttt      603
Ile Met Phe Lys Met Asp Ala Ser Leu Thr Ser Thr Met Glu Glu Phe
        140                 145                 150

cag gac ctg gtg aaa gcc aat ggt gag gag tcc cac tgc cac ctc atc      651
Gln Asp Leu Val Lys Ala Asn Gly Glu Glu Ser His Cys His Leu Ile
    155                 160                 165

gac acg aca caa att aat tct cga gac tgg tcc agg aaa ctg act cag      699
Asp Thr Thr Gln Ile Asn Ser Arg Asp Trp Ser Arg Lys Leu Thr Gln
170                 175                 180                 185

agg ata aaa tca aat acc agc aag aag cgg aaa gtg tcc ctg ctg ttt      747
Arg Ile Lys Ser Asn Thr Ser Lys Lys Arg Lys Val Ser Leu Leu Phe
                190                 195                 200

gac cat ctt gaa cct gaa gaa ctg tct gaa cac ctc acc tac ctt gag      795
Asp His Leu Glu Pro Glu Glu Leu Ser Glu His Leu Thr Tyr Leu Glu
            205                 210                 215

ttc aag tcc ttc cga cgg ata tct ttc tct gat tat cag aat tac ctt      843
Phe Lys Ser Phe Arg Arg Ile Ser Phe Ser Asp Tyr Gln Asn Tyr Leu
        220                 225                 230

gta aac agc tgc gta aag gag aac ccc acc atg gag cgg tcc att gcc      891
Val Asn Ser Cys Val Lys Glu Asn Pro Thr Met Glu Arg Ser Ile Ala
    235                 240                 245

ctg tgc aat ggc atc tcc cag tgg gta caa ctg atg gtt ctc agc cgt      939
Leu Cys Asn Gly Ile Ser Gln Trp Val Gln Leu Met Val Leu Ser Arg
250                 255                 260                 265

ccc acc cca cag ctc cgg gca gag gtc ttc atc aag ttc atc cat gtg      987
Pro Thr Pro Gln Leu Arg Ala Glu Val Phe Ile Lys Phe Ile His Val
                270                 275                 280

gct cag aag ctc cac cag cta cag aac ttc aac acg cta atg gct gtg     1035
Ala Gln Lys Leu His Gln Leu Gln Asn Phe Asn Thr Leu Met Ala Val
            285                 290                 295
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atc ggg gga ctg tgt cac agc tcc atc tcc agg ctc aag gag aca agt     1083
Ile Gly Gly Leu Cys His Ser Ser Ile Ser Arg Leu Lys Glu Thr Ser
        300                 305                 310

tca cat gtc cca cat gag atc aat aag gtt ctg ggt gag atg act gaa     1131
Ser His Val Pro His Glu Ile Asn Lys Val Leu Gly Glu Met Thr Glu
    315                 320                 325

ctg ctg tcc tcc tgc aga aac tat gac aac tac agg cga gcc tat ggt     1179
Leu Leu Ser Ser Cys Arg Asn Tyr Asp Asn Tyr Arg Arg Ala Tyr Gly
330                 335                 340                 345

gag tgc acc cac ttc aaa atc ccc ata ctg ggt gtg cac ctc aag gac     1227
Glu Cys Thr His Phe Lys Ile Pro Ile Leu Gly Val His Leu Lys Asp
                350                 355                 360

ctc ata tcc cta tat gaa gcc atg cct gac tac ctg gaa gac ggg aag     1275
Leu Ile Ser Leu Tyr Glu Ala Met Pro Asp Tyr Leu Glu Asp Gly Lys
            365                 370                 375

gtg aat gtc caa aag ctc ctg gcc ctt tac aat cac atc aat gag ttg     1323
Val Asn Val Gln Lys Leu Leu Ala Leu Tyr Asn His Ile Asn Glu Leu
        380                 385                 390

gtc cag ctg cag gac gtg gcc cca cca ttg gat gcc aac aag gac ctg     1371
Val Gln Leu Gln Asp Val Ala Pro Pro Leu Asp Ala Asn Lys Asp Leu
    395                 400                 405

gtg cac ctg ctg acg tta tcc ctg gat cta tac tac acc gaa gat gaa     1419
Val His Leu Leu Thr Leu Ser Leu Asp Leu Tyr Tyr Thr Glu Asp Glu
410                 415                 420                 425

atc tat gag ctt tcc tac gcc cgt gaa cca agg aac cac agg gcc ccg     1467
Ile Tyr Glu Leu Ser Tyr Ala Arg Glu Pro Arg Asn His Arg Ala Pro
                430                 435                 440

cca ctg aca cct tcg aag cca cca gtt gta gtg gac tgg gcc tct gga     1515
Pro Leu Thr Pro Ser Lys Pro Pro Val Val Val Asp Trp Ala Ser Gly
            445                 450                 455

gtg tct ccc aaa cct gac ccg aag acc atc agc aaa cac gtc caa agg     1563
Val Ser Pro Lys Pro Asp Pro Lys Thr Ile Ser Lys His Val Gln Arg
        460                 465                 470

atg gtg gat tct gtc ttt aag aac tat gat ctc gac cag gat gga tat     1611
Met Val Asp Ser Val Phe Lys Asn Tyr Asp Leu Asp Gln Asp Gly Tyr
    475                 480                 485

atc tct cag gag gag ttt gaa aag att gct gcg agc ttt cca ttt tcc     1659
Ile Ser Gln Glu Glu Phe Glu Lys Ile Ala Ala Ser Phe Pro Phe Ser
490                 495                 500                 505

ttc tgt gtg atg gac aaa gat agg gag ggc ctc atc agc aga gac gag     1707
Phe Cys Val Met Asp Lys Asp Arg Glu Gly Leu Ile Ser Arg Asp Glu
                510                 515                 520

atc aca gcc tac ttc atg agg gcc agc tcc atc tat tcc aag ctg ggc     1755
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Ile Thr Ala Tyr Phe Met Arg Ala Ser Ser Ile Tyr Ser Lys Leu Gly
            525                 530                 535

cta ggc ttt cca cac aac ttt caa gag acc act tac ctg aag ccc acc     1803
Leu Gly Phe Pro His Asn Phe Gln Glu Thr Thr Tyr Leu Lys Pro Thr
        540                 545                 550

ttc tgt gac aac tgt gct ggc ttt ctc tgg ggt gtg atc aag caa ggc     1851
Phe Cys Asp Asn Cys Ala Gly Phe Leu Trp Gly Val Ile Lys Gln Gly
    555                 560                 565

tat cgc tgt aaa gac tgt ggg atg aac tgc cac aaa cag tgc aaa gac     1899
Tyr Arg Cys Lys Asp Cys Gly Met Asn Cys His Lys Gln Cys Lys Asp
570                 575                 580                 585

ctg gta gtg ttt gag tgc aag aaa cga tcc aag agc ccg gcg gta tcc     1947
Leu Val Val Phe Glu Cys Lys Lys Arg Ser Lys Ser Pro Ala Val Ser
                590                 595                 600

aca gaa aac atc agc tct gtg gtg cca atg tcc act ctt tgt cca ctg     1995
Thr Glu Asn Ile Ser Ser Val Val Pro Met Ser Thr Leu Cys Pro Leu
            605                 610                 615

gga acc aaa gat ctg ctc cat gca ccc gaa gaa gga tct ttc att ttc     2043
Gly Thr Lys Asp Leu Leu His Ala Pro Glu Glu Gly Ser Phe Ile Phe
        620                 625                 630

cag aat gga gag gtt gtg gac cac agt gag gag agc aag gat agg acc     2091
Gln Asn Gly Glu Val Val Asp His Ser Glu Glu Ser Lys Asp Arg Thr
    635                 640                 645

atc atg ctc ttg ggc gta tcc tca cag aaa att tca gtt cgg ctg aag     2139
Ile Met Leu Leu Gly Val Ser Ser Gln Lys Ile Ser Val Arg Leu Lys
650                 655                 660                 665

agg act gtt gcc cac aag acc acc cag aca gaa tca ttt cct tgg gtt     2187
Arg Thr Val Ala His Lys Thr Thr Gln Thr Glu Ser Phe Pro Trp Val
                670                 675                 680

ggc ggc gag atg ccc cct ggt cac ttt gtg ctg act tct cca aga aag     2235
Gly Gly Glu Met Pro Pro Gly His Phe Val Leu Thr Ser Pro Arg Lys
            685                 690                 695

tca gca caa ggg gct ctt tat gtg cac agt cca gca tct ccg tgc ccc     2283
Ser Ala Gln Gly Ala Leu Tyr Val His Ser Pro Ala Ser Pro Cys Pro
        700                 705                 710

agc cca gca ctg gtc cgg aag cgg gca ttc gtc aag tgg gag aac aaa     2331
Ser Pro Ala Leu Val Arg Lys Arg Ala Phe Val Lys Trp Glu Asn Lys
    715                 720                 725

gag tcc ctt atc aaa cca aaa cca gag ctt cac ctc agg ctc cgg acc     2379
Glu Ser Leu Ile Lys Pro Lys Pro Glu Leu His Leu Arg Leu Arg Thr
730                 735                 740                 745

tac caa gaa ctg gaa cag gag gta aat acc ctg agg gca gat aac gat     2427
Tyr Gln Glu Leu Glu Gln Glu Val Asn Thr Leu Arg Ala Asp Asn Asp
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                750                 755                 760

gct ctg aag atc cag ctg aag tat gca cag aaa caa ata gaa tcc ctg     2475
Ala Leu Lys Ile Gln Leu Lys Tyr Ala Gln Lys Gln Ile Glu Ser Leu
            765                 770                 775

cag ctt ggc aaa agc aat cac gtc tta gca cag atg gac cac ggt gat     2523
Gln Leu Gly Lys Ser Asn His Val Leu Ala Gln Met Asp His Gly Asp
        780                 785                 790

ggt act taatccagaa attcaaggaa cagaatctgc agacgggttt actgggatct      2579
Gly Thr
    795

cacttcaaaa ctgattgcag aggttcagca actttagact gattgacttt taaagggcag   2639

agatagccac tgttattggt gtccttggtt ttttccctaa ctgtctttaa tgtgagtcgt   2699

gggttttcag tcagttgagt aaaagggaag aaaagttcca gcatgtaaaa cactgagcag   2759

tcatattcta acctttttctt tcttttactg aaaccaatac caaacatgtg ctaaaataag   2819

agtatagttt cctgacagtg tctcaggcag cctgctttac tgattcgcac ttagataaag   2879

agcccctggt gaatcaattt gctgccttcc ccagggtttc tgcaaactgg gagttacttt   2939

gttctacccg aaaacctgct cataatggaa acaataccct aaaagtggtg actttgacat   2999

gcctgcattg tttgtgaagc tgatccctac cttattcact acctcagatc tcaagagcct   3059

ctttccctgt cctttacttg ccccctattt cctcccttgc ttgtaggcac atcagcatat   3119

ctacctagaa gtgacctcct agagatgtag cctgtgttta aatccagagc ttcttaattg   3179

aacttgacat tgtctgattg caggccaact tatagctcta ggtcttagtc attatgaaat   3239

acaaaataaa actacccata atcatcaatt accatgtcat acacagaact cattatctaa   3299

gtcaaacgac gtaaacacgc ctgtccagat agtctttctt tagtggatag aattaacaat   3359

ctgtgacctt ttaaaagaca tggtctgtga acagtgttta gttcttcacg ttctagtctc   3419

tctctctctc tctctctctc tctctctctc tctctctctc tctctcaagt aaactatcgt   3479

aaggtcctct tttgaactga atctgtgctt aaaattgtct tcacttttat tatctacaaa   3539

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Gly Ser Arg Ala Gly Pro Lys Gly Arg Leu Glu Ala Lys Ser Thr Asn
            20                  25                  30

Ser Pro Leu Pro Ala Gln Pro Ser Leu Ala Gln Ile Thr Gln Phe Arg
        35                  40                  45

Met Met Val Ser Leu Gly His Leu Ala Lys Gly Ala Ser Leu Asp Asp
    50                  55                  60

Leu Ile Asp Ser Cys Ile Gln Ser Phe Asp Ala Asp Gly Asn Leu Cys
65                  70                  75                  80

Arg Ser Asn Gln Leu Leu Gln Val Met Leu Thr Met His Arg Ile Ile
                85                  90                  95

Ile Ser Ser Ala Glu Leu Leu Gln Lys Leu Met Asn Leu Tyr Lys Asp
            100                 105                 110

Ala Leu Glu Lys Asn Ser Pro Gly Ile Cys Leu Lys Ile Cys Tyr Phe
        115                 120                 125

Val Arg Tyr Trp Ile Thr Glu Phe Trp Ile Met Phe Lys Met Asp Ala
    130                 135                 140

Ser Leu Thr Ser Thr Met Glu Glu Phe Gln Asp Leu Val Lys Ala Asn
145                 150                 155                 160

Gly Glu Glu Ser His Cys His Leu Ile Asp Thr Thr Gln Ile Asn Ser
                165                 170                 175

Arg Asp Trp Ser Arg Lys Leu Thr Gln Arg Ile Lys Ser Asn Thr Ser
            180                 185                 190

Lys Lys Arg Lys Val Ser Leu Leu Phe Asp His Leu Glu Pro Glu Glu
        195                 200                 205

Leu Ser Glu His Leu Thr Tyr Leu Glu Phe Lys Ser Phe Arg Arg Ile
    210                 215                 220
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Ser Phe Ser Asp Tyr Gln Asn Tyr Leu Val Asn Ser Cys Val Lys Glu
225                 230                 235                 240

Asn Pro Thr Met Glu Arg Ser Ile Ala Leu Cys Asn Gly Ile Ser Gln
                245                 250                 255

Trp Val Gln Leu Met Val Leu Ser Arg Pro Thr Pro Gln Leu Arg Ala
            260                 265                 270

Glu Val Phe Ile Lys Phe Ile His Val Ala Gln Lys Leu His Gln Leu
        275                 280                 285

Gln Asn Phe Asn Thr Leu Met Ala Val Ile Gly Gly Leu Cys His Ser
    290                 295                 300

Ser Ile Ser Arg Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile
305                 310                 315                 320

Asn Lys Val Leu Gly Glu Met Thr Glu Leu Leu Ser Ser Cys Arg Asn
                325                 330                 335

Tyr Asp Asn Tyr Arg Arg Ala Tyr Gly Glu Cys Thr His Phe Lys Ile
            340                 345                 350

Pro Ile Leu Gly Val His Leu Lys Asp Leu Ile Ser Leu Tyr Glu Ala
        355                 360                 365

Met Pro Asp Tyr Leu Glu Asp Gly Lys Val Asn Val Gln Lys Leu Leu
    370                 375                 380

Ala Leu Tyr Asn His Ile Asn Glu Leu Val Gln Leu Gln Asp Val Ala
385                 390                 395                 400

Pro Pro Leu Asp Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser
                405                 410                 415

Leu Asp Leu Tyr Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala
            420                 425                 430

Arg Glu Pro Arg Asn His Arg Ala Pro Pro Leu Thr Pro Ser Lys Pro
        435                 440                 445

Pro Val Val Val Asp Trp Ala Ser Gly Val Ser Pro Lys Pro Asp Pro
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    450                 455                 460

Lys Thr Ile Ser Lys His Val Gln Arg Met Val Asp Ser Val Phe Lys
465                 470                 475                 480

Asn Tyr Asp Leu Asp Gln Asp Gly Tyr Ile Ser Gln Glu Glu Phe Glu
                485                 490                 495

Lys Ile Ala Ala Ser Phe Pro Phe Ser Phe Cys Val Met Asp Lys Asp
            500                 505                 510

Arg Glu Gly Leu Ile Ser Arg Asp Glu Ile Thr Ala Tyr Phe Met Arg
        515                 520                 525

Ala Ser Ser Ile Tyr Ser Lys Leu Gly Leu Gly Phe Pro His Asn Phe
    530                 535                 540

Gln Glu Thr Thr Tyr Leu Lys Pro Thr Phe Cys Asp Asn Cys Ala Gly
545                 550                 555                 560

Phe Leu Trp Gly Val Ile Lys Gln Gly Tyr Arg Cys Lys Asp Cys Gly
                565                 570                 575

Met Asn Cys His Lys Gln Cys Lys Asp Leu Val Val Phe Glu Cys Lys
            580                 585                 590

Lys Arg Ser Lys Ser Pro Ala Val Ser Thr Glu Asn Ile Ser Ser Val
        595                 600                 605

Val Pro Met Ser Thr Leu Cys Pro Leu Gly Thr Lys Asp Leu Leu His
    610                 615                 620

Ala Pro Glu Glu Gly Ser Phe Ile Phe Gln Asn Gly Glu Val Val Asp
625                 630                 635                 640

His Ser Glu Glu Ser Lys Asp Arg Thr Ile Met Leu Leu Gly Val Ser
                645                 650                 655

Ser Gln Lys Ile Ser Val Arg Leu Lys Arg Thr Val Ala His Lys Thr
            660                 665                 670

Thr Gln Thr Glu Ser Phe Pro Trp Val Gly Gly Glu Met Pro Pro Gly
        675                 680                 685
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His Phe Val Leu Thr Ser Pro Arg Lys Ser Ala Gln Gly Ala Leu Tyr
    690                 695                 700

Val His Ser Pro Ala Ser Pro Cys Pro Ser Pro Ala Leu Val Arg Lys
705                 710                 715                 720

Arg Ala Phe Val Lys Trp Glu Asn Lys Glu Ser Leu Ile Lys Pro Lys
                725                 730                 735

Pro Glu Leu His Leu Arg Leu Arg Thr Tyr Gln Glu Leu Glu Gln Glu
            740                 745                 750

Val Asn Thr Leu Arg Ala Asp Asn Asp Ala Leu Lys Ile Gln Leu Lys
        755                 760                 765

Tyr Ala Gln Lys Gln Ile Glu Ser Leu Gln Leu Gly Lys Ser Asn His
    770                 775                 780

Val Leu Ala Gln Met Asp His Gly Asp Gly Thr
785                 790                 795
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ggccgcgcta ggtgagccgg caccgggagc gcgggccgcg gcc atg ggc acc ctg      115
                                                 Met Gly Thr Leu
                                                 1

ggc aag gcg aga gag gct ccg cgg aaa cct tcc cat ggc tgc aga gct      163
Gly Lys Ala Arg Glu Ala Pro Arg Lys Pro Ser His Gly Cys Arg Ala
5                   10                  15                  20

gcc tct aaa gca aga cta gag gca aag cca gcc aac agc ccc ttc ccc      211
Ala Ser Lys Ala Arg Leu Glu Ala Lys Pro Ala Asn Ser Pro Phe Pro
                25                  30                  35

tcc cat ccc agc ttg gcc cac atc acc cag ttc cga atg atg gtg tct      259
Ser His Pro Ser Leu Ala His Ile Thr Gln Phe Arg Met Met Val Ser
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            40                  45                  50

ctg gga cat tta gcc aaa gga gcc agc ctg gac gat ctc att gac agc      307
Leu Gly His Leu Ala Lys Gly Ala Ser Leu Asp Asp Leu Ile Asp Ser
        55                  60                  65

tgc att caa tct ttt gat gca gat gga aac ctg tgt cga agt aac caa      355
Cys Ile Gln Ser Phe Asp Ala Asp Gly Asn Leu Cys Arg Ser Asn Gln
    70                  75                  80

ctg ttg caa gtc atg ctg acc atg cac cga att gtc atc tcc tct gca      403
Leu Leu Gln Val Met Leu Thr Met His Arg Ile Val Ile Ser Ser Ala
85                  90                  95                  100

gaa ctg ctc caa aaa gtt atc acc ctc tat aag gat gct ttg gca aag      451
Glu Leu Leu Gln Lys Val Ile Thr Leu Tyr Lys Asp Ala Leu Ala Lys
                105                 110                 115

aat tca cca gga ctt tgc ctg aag atc tgt tat ttt gta agg tat tgg      499
Asn Ser Pro Gly Leu Cys Leu Lys Ile Cys Tyr Phe Val Arg Tyr Trp
            120                 125                 130

ata aca gaa ttc tgg gtc atg ttt aaa atg gac gcc agc ttg aca gac      547
Ile Thr Glu Phe Trp Val Met Phe Lys Met Asp Ala Ser Leu Thr Asp
        135                 140                 145

act atg gag gag ttt cag gaa ctg gtg aaa gct aag ggt gag gag tta      595
Thr Met Glu Glu Phe Gln Glu Leu Val Lys Ala Lys Gly Glu Glu Leu
    150                 155                 160

cat tgc cgc ctg att gac aca act caa atc aat gcc cgt gac tgg tcc      643
His Cys Arg Leu Ile Asp Thr Thr Gln Ile Asn Ala Arg Asp Trp Ser
165                 170                 175                 180

agg aaa ctt act caa agg ata aaa tca aat acc agc aag aaa cgg aaa      691
Arg Lys Leu Thr Gln Arg Ile Lys Ser Asn Thr Ser Lys Lys Arg Lys
                185                 190                 195

gtc tcc ctg ctc ttt gac cat ctg gaa cca gaa gag cta tcc gag cac      739
Val Ser Leu Leu Phe Asp His Leu Glu Pro Glu Glu Leu Ser Glu His
            200                 205                 210

ctc acc tac ctt gag ttc aag tct ttc cgg agg ata tcg ttc tct gat      787
Leu Thr Tyr Leu Glu Phe Lys Ser Phe Arg Arg Ile Ser Phe Ser Asp
        215                 220                 225

tat cag aat tac ctt gta aat agc tgt gtg aag gaa aac ccc acc atg      835
Tyr Gln Asn Tyr Leu Val Asn Ser Cys Val Lys Glu Asn Pro Thr Met
    230                 235                 240

gag cga tct att gct ctg tgc aac ggc atc tcc cag tgg gta caa ctg      883
Glu Arg Ser Ile Ala Leu Cys Asn Gly Ile Ser Gln Trp Val Gln Leu
245                 250                 255                 260

atg gtt ctc agc cgc ccc acg ccg cag ctc cga gca gaa gtc ttc atc      931
Met Val Leu Ser Arg Pro Thr Pro Gln Leu Arg Ala Glu Val Phe Ile
                265                 270                 275
```

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aag ttc atc cag gtg gct cag aag ctc cac caa cta cag aac ttc aat      979
Lys Phe Ile Gln Val Ala Gln Lys Leu His Gln Leu Gln Asn Phe Asn
            280                 285                 290

aca ctg atg gct gtg ata ggt ggg ctg tgt cac agc tca atc tcg agg     1027
Thr Leu Met Ala Val Ile Gly Gly Leu Cys His Ser Ser Ile Ser Arg
        295                 300                 305

ctc aag gag aca agt tcg cat gtc cca cat gaa atc aat aag gtt ctc     1075
Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile Asn Lys Val Leu
    310                 315                 320

ggt gag atg act gag ctg ctg tcc tcc tcc aga aac tac gac aat tac     1123
Gly Glu Met Thr Glu Leu Leu Ser Ser Ser Arg Asn Tyr Asp Asn Tyr
325                 330                 335                 340

cgg cga gcc tat gga gag tgc acc gac ttc aag atc ccc att ctg ggt     1171
Arg Arg Ala Tyr Gly Glu Cys Thr Asp Phe Lys Ile Pro Ile Leu Gly
                345                 350                 355

gtg cat ctc aag gac ctc atc tcc ctg tat gaa gcc atg cct gac tat     1219
Val His Leu Lys Asp Leu Ile Ser Leu Tyr Glu Ala Met Pro Asp Tyr
            360                 365                 370

ctg ggg gac ggg aaa gtg aac gtc cat aag cta ctg gcc cta tac aat     1267
Leu Gly Asp Gly Lys Val Asn Val His Lys Leu Leu Ala Leu Tyr Asn
        375                 380                 385

cat atc agt gaa ttg gtc cag ctg caa gag gtg gcc cca ccc ttg gag     1315
His Ile Ser Glu Leu Val Gln Leu Gln Glu Val Ala Pro Pro Leu Glu
    390                 395                 400

gct aac aag gac ttg gta cac ttg ctg acg tta tcc ctg gat ctt tac     1363
Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser Leu Asp Leu Tyr
405                 410                 415                 420

tac act gag gat gaa atc tat gag ctt tcc tat gcc cgg gaa cca agg     1411
Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala Arg Glu Pro Arg
                425                 430                 435

aac cac aga gct cca cca cta aca cct tca aag cca cca gta gta gtg     1459
Asn His Arg Ala Pro Pro Leu Thr Pro Ser Lys Pro Pro Val Val Val
            440                 445                 450

gac tgg gct tct gga gtg tct ccc aaa cct gat cca aaa acc att agc     1507
Asp Trp Ala Ser Gly Val Ser Pro Lys Pro Asp Pro Lys Thr Ile Ser
        455                 460                 465

aaa cac gtc cag agg atg gtg gat tct gtc ttc aag aac tat gat cac     1555
Lys His Val Gln Arg Met Val Asp Ser Val Phe Lys Asn Tyr Asp His
    470                 475                 480

gac cag gat gga tac att tct cag gaa gaa ttt gaa aag att gct gcg     1603
Asp Gln Asp Gly Tyr Ile Ser Gln Glu Glu Phe Glu Lys Ile Ala Ala
485                 490                 495                 500
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agt ttt cca ttt tcc ttc tgt gtg atg gac aaa gac agg gaa ggc ctc     1651
Ser Phe Pro Phe Ser Phe Cys Val Met Asp Lys Asp Arg Glu Gly Leu
                505                 510                 515

atc agc agg gat gag atc aca gcc tac ttc atg aga gcc agc tca atc     1699
Ile Ser Arg Asp Glu Ile Thr Ala Tyr Phe Met Arg Ala Ser Ser Ile
            520                 525                 530

tat tcc aag ctg ggc ctg ggc ttt cct cac aac ttc caa gag acc acc     1747
Tyr Ser Lys Leu Gly Leu Gly Phe Pro His Asn Phe Gln Glu Thr Thr
        535                 540                 545

tac ctg aag ccc act ttt tgt gac aac tgt gct gga ttt ctc tgg gga     1795
Tyr Leu Lys Pro Thr Phe Cys Asp Asn Cys Ala Gly Phe Leu Trp Gly
    550                 555                 560

gtg atc aaa caa gga tat cga tgt aaa gac tgc ggg atg aac tgt cac     1843
Val Ile Lys Gln Gly Tyr Arg Cys Lys Asp Cys Gly Met Asn Cys His
565                 570                 575                 580

aaa caa tgc aaa gat ctg gtt gtg ttt gag tgt aag aag cga gcc aag     1891
Lys Gln Cys Lys Asp Leu Val Val Phe Glu Cys Lys Lys Arg Ala Lys
                585                 590                 595

aac cca gta gct ccc aca gag aac aac act tct gtg ggg cca gtg tcc     1939
Asn Pro Val Ala Pro Thr Glu Asn Asn Thr Ser Val Gly Pro Val Ser
            600                 605                 610

aac ctt tgc tca ttg gga gcc aaa gat ctg ctc cat gca cct gag gaa     1987
Asn Leu Cys Ser Leu Gly Ala Lys Asp Leu Leu His Ala Pro Glu Glu
        615                 620                 625

gga cct ttt aca ttc cct aat ggg gag gct gtg gaa cat ggt gag gag     2035
Gly Pro Phe Thr Phe Pro Asn Gly Glu Ala Val Glu His Gly Glu Glu
    630                 635                 640

agt aag gat cgg acc atc atg ctg atg gga gtg tcc tca cag aag att     2083
Ser Lys Asp Arg Thr Ile Met Leu Met Gly Val Ser Ser Gln Lys Ile
645                 650                 655                 660

tct ctt cgg ctg aag agg gct gtt gcc cac aag gcc acc cag act gaa     2131
Ser Leu Arg Leu Lys Arg Ala Val Ala His Lys Ala Thr Gln Thr Glu
                665                 670                 675

tca cag cct tgg att ggc agt gag ggc cct tca ggt ccc ttt gtg ctg     2179
Ser Gln Pro Trp Ile Gly Ser Glu Gly Pro Ser Gly Pro Phe Val Leu
            680                 685                 690

tct tcc cca agg aag aca gcc cag gat act cta tat gtg ctt ccc agt     2227
Ser Ser Pro Arg Lys Thr Ala Gln Asp Thr Leu Tyr Val Leu Pro Ser
        695                 700                 705

ccc acc tct cca tgt cct agc cca gtc ttg gtc aga aag cgg gct ttt     2275
Pro Thr Ser Pro Cys Pro Ser Pro Val Leu Val Arg Lys Arg Ala Phe
    710                 715                 720

gtc aag tgg gag aat aaa gac tcc ctc ata aaa tca aag gag gag ctc     2323
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Val Lys Trp Glu Asn Lys Asp Ser Leu Ile Lys Ser Lys Glu Glu Leu
725                 730                 735                 740

cgt cac ctc aga ctg cct acc tac caa gaa ctg gaa cag gaa ata aat     2371
Arg His Leu Arg Leu Pro Thr Tyr Gln Glu Leu Glu Gln Glu Ile Asn
                745                 750                 755

act ctg aaa gca gat aat gat gcc cta aag atc caa ctg aaa tat gca     2419
Thr Leu Lys Ala Asp Asn Asp Ala Leu Lys Ile Gln Leu Lys Tyr Ala
            760                 765                 770

cag aag aaa ata gaa tcc ctc cag ctt gaa aaa agc aat cat gtc tta     2467
Gln Lys Lys Ile Glu Ser Leu Gln Leu Glu Lys Ser Asn His Val Leu
        775                 780                 785

gct caa atg gag cag ggt gac tgt tct tagcccagaa actaagtagc           2514
Ala Gln Met Glu Gln Gly Asp Cys Ser
    790                 795

acaatctgta gatgagtata gtgatctcat ttcctaaact gtaatgcaca gacctgagga   2574

actttacact gaccagcttt aaaacagtac tttaaaagga aaagcctgtt actgtttatt   2634

tacctaaaag attcctaatg tgcagcactg ttttctcttt cagttagttg actcaaaggg   2694

ggaaaactaa agaatgcaaa acttttgcta ttcataccac tgatgttcat caaaagtatg   2754

cgatctaaaa catgactatc atttcctgac aatggggcat ctcggtggcc tgcctggctg   2814

attcttcctt aaaactaaaa tctctggaaa atggatttgc ttcttaccct gtgttttctg   2874

caaactgact tactttgttc agccaaagc ttgctaataa tagaaaacta cccatattcc   2934

aaaagtagat ttcctctgta tcccagcata ctttgtgaac ctggctcctt cttcactacc   2994

tcagatctaa tcaattagtc catgtaccct ccttcctcac tacagtcata acacatgagc   3054

atatctacct agaagccaat ttctactgat gtagccacaa ctttttagag gcctattaaa   3114

catgacgtta tccaattgca ggtcaactta tagttgtagc cttacaactt acaggcatca   3174

gaaaataagt aatcaaatta ggtacctgga aacatagcta ttaccatctc atattactgt   3234

ctaattaaaa taaacataac gcaaacatgt ttgtccttat atattctaca gtggatagaa   3294

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catctttctc ttctgaagta aactattttg aaagttctct ttttgaaatg aatttgtgct   3414

taactgtctt cactattaat actatttaga aataagctaa ttggatcagt ggcttaaata   3474

atagctgact gtgtgtacat atgtatataa tatgtatata caatatcagg catgcatgtg   3534

gcttggaatt ttgtttcctc cataaaatgt ggaagtgaat taaacaagtt ttagtcattt   3594

atacaaagtc acaaatataa agttcagttt gtcacaagat taaattgctc acaaggtaaa   3654
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attgtattgt ttggcaaaat cacaagtaac aatcctgtga gttttctatt atgaaggtta 3714

ataataaatg ggctcattta gttgcctggg cacctattca caaattcatt tgtcagcctc 3774

tttttagttc tcttaaaaaa aaaaaaatca tatgatcatt ttccttttg ggggtactta 3834

gcttccatgc ctataaagtc tggtaccaga ctgacttgaa attcataaac aagttgtcca 3894

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atggggctag tgggatcaca gaaatctgga aaaaaaaaaa aaaaggcttt ggcttatcaa 4674

gcctagtgta aatttctgca tctcacacga ctttagtttg gccaggtatt tatctgccaa 4734

aacaaggaca aatcttgttg tattaacagc agggtcactt ctcattttct ttgctgactt 4794

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aaaaacaaat gtacagattg taaagttttt tgatacctaa tgtaagtttt ctttgtgtaa 4914

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<212> PRT
<213> Homo sapiens

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Met Gly Thr Leu Gly Lys Ala Arg Glu Ala Pro Arg Lys Pro Ser His

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Gly Cys Arg Ala Ala Ser Lys Ala Arg Leu Glu Ala Lys Pro Ala Asn
            20                  25                  30

Ser Pro Phe Pro Ser His Pro Ser Leu Ala His Ile Thr Gln Phe Arg
        35                  40                  45

Met Met Val Ser Leu Gly His Leu Ala Lys Gly Ala Ser Leu Asp Asp
    50                  55                  60

Leu Ile Asp Ser Cys Ile Gln Ser Phe Asp Ala Asp Gly Asn Leu Cys
65                  70                  75                  80

Arg Ser Asn Gln Leu Leu Gln Val Met Leu Thr Met His Arg Ile Val
                85                  90                  95

Ile Ser Ser Ala Glu Leu Leu Gln Lys Val Ile Thr Leu Tyr Lys Asp
            100                 105                 110

Ala Leu Ala Lys Asn Ser Pro Gly Leu Cys Leu Lys Ile Cys Tyr Phe
        115                 120                 125

Val Arg Tyr Trp Ile Thr Glu Phe Trp Val Met Phe Lys Met Asp Ala
    130                 135                 140

Ser Leu Thr Asp Thr Met Glu Glu Phe Gln Glu Leu Val Lys Ala Lys
145                 150                 155                 160

Gly Glu Glu Leu His Cys Arg Leu Ile Asp Thr Thr Gln Ile Asn Ala
                165                 170                 175

Arg Asp Trp Ser Arg Lys Leu Thr Gln Arg Ile Lys Ser Asn Thr Ser
            180                 185                 190

Lys Lys Arg Lys Val Ser Leu Leu Phe Asp His Leu Glu Pro Glu Glu
        195                 200                 205

Leu Ser Glu His Leu Thr Tyr Leu Glu Phe Lys Ser Phe Arg Arg Ile
    210                 215                 220

Ser Phe Ser Asp Tyr Gln Asn Tyr Leu Val Asn Ser Cys Val Lys Glu
225                 230                 235                 240
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Asn Pro Thr Met Glu Arg Ser Ile Ala Leu Cys Asn Gly Ile Ser Gln
                245                 250                 255

Trp Val Gln Leu Met Val Leu Ser Arg Pro Thr Pro Gln Leu Arg Ala
            260                 265                 270

Glu Val Phe Ile Lys Phe Ile Gln Val Ala Gln Lys Leu His Gln Leu
        275                 280                 285

Gln Asn Phe Asn Thr Leu Met Ala Val Ile Gly Gly Leu Cys His Ser
    290                 295                 300

Ser Ile Ser Arg Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile
305                 310                 315                 320

Asn Lys Val Leu Gly Glu Met Thr Glu Leu Leu Ser Ser Ser Arg Asn
                325                 330                 335

Tyr Asp Asn Tyr Arg Arg Ala Tyr Gly Glu Cys Thr Asp Phe Lys Ile
            340                 345                 350

Pro Ile Leu Gly Val His Leu Lys Asp Leu Ile Ser Leu Tyr Glu Ala
        355                 360                 365

Met Pro Asp Tyr Leu Gly Asp Gly Lys Val Asn Val His Lys Leu Leu
    370                 375                 380

Ala Leu Tyr Asn His Ile Ser Glu Leu Val Gln Leu Gln Glu Val Ala
385                 390                 395                 400

Pro Pro Leu Glu Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser
                405                 410                 415

Leu Asp Leu Tyr Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala
            420                 425                 430

Arg Glu Pro Arg Asn His Arg Ala Pro Pro Leu Thr Pro Ser Lys Pro
        435                 440                 445

Pro Val Val Val Asp Trp Ala Ser Gly Val Ser Pro Lys Pro Asp Pro
    450                 455                 460
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Lys Thr Ile Ser Lys His Val Gln Arg Met Val Asp Ser Val Phe Lys
465                 470                 475                 480

Asn Tyr Asp His Asp Gln Asp Gly Tyr Ile Ser Gln Glu Glu Phe Glu
                485                 490                 495

Lys Ile Ala Ala Ser Phe Pro Phe Ser Phe Cys Val Met Asp Lys Asp
            500                 505                 510

Arg Glu Gly Leu Ile Ser Arg Asp Glu Ile Thr Ala Tyr Phe Met Arg
        515                 520                 525

Ala Ser Ser Ile Tyr Ser Lys Leu Gly Leu Gly Phe Pro His Asn Phe
    530                 535                 540

Gln Glu Thr Thr Tyr Leu Lys Pro Thr Phe Cys Asp Asn Cys Ala Gly
545                 550                 555                 560

Phe Leu Trp Gly Val Ile Lys Gln Gly Tyr Arg Cys Lys Asp Cys Gly
                565                 570                 575

Met Asn Cys His Lys Gln Cys Lys Asp Leu Val Val Phe Glu Cys Lys
            580                 585                 590

Lys Arg Ala Lys Asn Pro Val Ala Pro Thr Glu Asn Asn Thr Ser Val
        595                 600                 605

Gly Pro Val Ser Asn Leu Cys Ser Leu Gly Ala Lys Asp Leu Leu His
    610                 615                 620

Ala Pro Glu Glu Gly Pro Phe Thr Phe Pro Asn Gly Glu Ala Val Glu
625                 630                 635                 640

His Gly Glu Glu Ser Lys Asp Arg Thr Ile Met Leu Met Gly Val Ser
                645                 650                 655

Ser Gln Lys Ile Ser Leu Arg Leu Lys Arg Ala Val Ala His Lys Ala
            660                 665                 670

Thr Gln Thr Glu Ser Gln Pro Trp Ile Gly Ser Glu Gly Pro Ser Gly
        675                 680                 685
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Pro Phe Val Leu Ser Ser Pro Arg Lys Thr Ala Gln Asp Thr Leu Tyr
    690                 695                 700

Val Leu Pro Ser Pro Thr Ser Pro Cys Pro Ser Pro Val Leu Val Arg
705                 710                 715                 720

Lys Arg Ala Phe Val Lys Trp Glu Asn Lys Asp Ser Leu Ile Lys Ser
                725                 730                 735

Lys Glu Glu Leu Arg His Leu Arg Leu Pro Thr Tyr Gln Glu Leu Glu
            740                 745                 750

Gln Glu Ile Asn Thr Leu Lys Ala Asp Asn Asp Ala Leu Lys Ile Gln
        755                 760                 765

Leu Lys Tyr Ala Gln Lys Lys Ile Glu Ser Leu Gln Leu Glu Lys Ser
    770                 775                 780

Asn His Val Leu Ala Gln Met Glu Gln Gly Asp Cys Ser
785                 790                 795
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cctccccca tcacaggtca gctggccagg tgagaaccac tggcaggtgg gcccagctgt    120

ggtggagagt ccagctgtgg gggcaccgca ggtgcgaggt ctcccggacg tggttccgga    180

gggcacgctg ctcaat atg gtg ctg aag aga atg cac cgt ccc cgg tgc tgc    232
                Met Val Leu Lys Arg Met His Arg Pro Arg Cys Cys
                1               5                   10

tct tac cag cta gtg ttc gag cac cgg cgc cca agc tgc atc cag gga      280
Ser Tyr Gln Leu Val Phe Glu His Arg Arg Pro Ser Cys Ile Gln Gly
        15                  20                  25

ctt cgc tgg acg cca ctt acc aac agt gag ggc tcc ctg gac ttc aga      328
Leu Arg Trp Thr Pro Leu Thr Asn Ser Glu Gly Ser Leu Asp Phe Arg
    30                  35                  40
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gtg agc ctg gag cag gcc acc aca gag cat gtg cac aag gcc ggg aag      376
Val Ser Leu Glu Gln Ala Thr Thr Glu His Val His Lys Ala Gly Lys
45                  50                  55                  60

ctc ctg tac cgt cat ctc ttg gca acg tac cct acc ctc atc cga gac      424
Leu Leu Tyr Arg His Leu Leu Ala Thr Tyr Pro Thr Leu Ile Arg Asp
                65                  70                  75

aga aaa tac cat ctg cga cta cat cgg cag tgc tgc tct ggc cgg gag      472
Arg Lys Tyr His Leu Arg Leu His Arg Gln Cys Cys Ser Gly Arg Glu
            80                  85                  90

cta gtg gat ggg atc ttg gct ctg ggt ctt ggg gtc cac tca cgg agc      520
Leu Val Asp Gly Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser
        95                  100                 105

caa gct gtg ggc atc tgc cag gtg ttg ctg gat gag ggt gcc ctt tgc      568
Gln Ala Val Gly Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys
    110                 115                 120

cat gta aaa cat gac tgg acc ttc cag gac cga gac gcc caa ttc tac      616
His Val Lys His Asp Trp Thr Phe Gln Asp Arg Asp Ala Gln Phe Tyr
125                 130                 135                 140

aga ttc cct gga ccg gag ccc cag cct gca gga act cat gac gtg gaa      664
Arg Phe Pro Gly Pro Glu Pro Gln Pro Ala Gly Thr His Asp Val Glu
                145                 150                 155

gag gag ctt gtt gag gca atg gcc cta ctc tcc cag cga ggg cct gat      712
Glu Glu Leu Val Glu Ala Met Ala Leu Leu Ser Gln Arg Gly Pro Asp
            160                 165                 170

gcc cta ctc act gtt gca ctc cgg aag tcc ccg ggt cag cgt aca gat      760
Ala Leu Leu Thr Val Ala Leu Arg Lys Ser Pro Gly Gln Arg Thr Asp
        175                 180                 185

gaa gag ctg gac ctc atc ttc gag gag ctc gta cat atc aag gcg gtg      808
Glu Glu Leu Asp Leu Ile Phe Glu Glu Leu Val His Ile Lys Ala Val
    190                 195                 200

gct cac ctt tct aac tcg gtg aaa cgg gaa cta gct gct gtt ctg ctc      856
Ala His Leu Ser Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu
205                 210                 215                 220

ttt gaa cca cac agc aag gca gga act gtg ttg ttc agc cag ggg gac      904
Phe Glu Pro His Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp
                225                 230                 235

aag ggt acc tca tgg tac att atc tgg aag gga tct gtc aat gtg gtg      952
Lys Gly Thr Ser Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn Val Val
            240                 245                 250

acc cgt ggc aag ggg ctg gtg acc acg ttg cac gag gga gat gac ttt     1000
Thr Arg Gly Lys Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe
        255                 260                 265

gga cag ctg gct ctg gtg aac gac gca cct cga gca gcc acc atc atc     1048
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Gly Gln Leu Ala Leu Val Asn Asp Ala Pro Arg Ala Ala Thr Ile Ile
    270                 275                 280

ctt cga gaa aat aac tgt cac ttt ctg cgt gtg gac aag cag gac ttc     1096
Leu Arg Glu Asn Asn Cys His Phe Leu Arg Val Asp Lys Gln Asp Phe
285                 290                 295                 300

aac cgc atc atc aag gat gtg gaa gca aaa acc atg aga ctg gaa gaa     1144
Asn Arg Ile Ile Lys Asp Val Glu Ala Lys Thr Met Arg Leu Glu Glu
                305                 310                 315

cac ggc aaa gtg gtg tta gtt ttg gag aga acc tct cag ggt gct ggc     1192
His Gly Lys Val Val Leu Val Leu Glu Arg Thr Ser Gln Gly Ala Gly
            320                 325                 330

cct tcc cgc cct ccg acc cca ggc agg aac cga tat acg gta atg tct     1240
Pro Ser Arg Pro Pro Thr Pro Gly Arg Asn Arg Tyr Thr Val Met Ser
        335                 340                 345

ggc acc cca gag aaa atc cta gaa ctc ctg ttg gag gct atg aga ccg     1288
Gly Thr Pro Glu Lys Ile Leu Glu Leu Leu Leu Glu Ala Met Arg Pro
    350                 355                 360

gat tcc agt gct cat gac cca aca gag aca ttc ctc agt gac ttc ctg     1336
Asp Ser Ser Ala His Asp Pro Thr Glu Thr Phe Leu Ser Asp Phe Leu
365                 370                 375                 380

ctg acg cac agt gtc ttc atg ccc tgc aca cag ctc ttt gcc gcc ctc     1384
Leu Thr His Ser Val Phe Met Pro Cys Thr Gln Leu Phe Ala Ala Leu
                385                 390                 395

ctg cac cac ttc cac gtg gag cca tca gag cct gcc ggg ggc agc gag     1432
Leu His His Phe His Val Glu Pro Ser Glu Pro Ala Gly Gly Ser Glu
            400                 405                 410

cag gaa cgc agc acc tac atc tgc aac aag agg cag cag att ctg cgt     1480
Gln Glu Arg Ser Thr Tyr Ile Cys Asn Lys Arg Gln Gln Ile Leu Arg
        415                 420                 425

ctg gtc agc cgg tgg gtg gcc ctc tac agc ccc atg ctc cgc tca gat     1528
Leu Val Ser Arg Trp Val Ala Leu Tyr Ser Pro Met Leu Arg Ser Asp
    430                 435                 440

ccc gtg gcc acc agc ttc ctc cag aaa ctc tca gac ctg gtg agc aga     1576
Pro Val Ala Thr Ser Phe Leu Gln Lys Leu Ser Asp Leu Val Ser Arg
445                 450                 455                 460

gat acc cga ctt agc aac ttg ctg agg gaa cag tat ccg gag aga cgg     1624
Asp Thr Arg Leu Ser Asn Leu Leu Arg Glu Gln Tyr Pro Glu Arg Arg
                465                 470                 475

cga cac cac agg ttg gag aat ggc tgt ggg aat gta tct cct cag acc     1672
Arg His His Arg Leu Glu Asn Gly Cys Gly Asn Val Ser Pro Gln Thr
            480                 485                 490

aag gcc cgg aat gca cct gtt tgg ttt cct aac cat gag gaa ccc ctc     1720
Lys Ala Arg Asn Ala Pro Val Trp Phe Pro Asn His Glu Glu Pro Leu
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        495                 500                 505

cca agc agc gct ggg gcc atc cga gtc ggg gac aaa gtc ccc tat gat     1768
Pro Ser Ser Ala Gly Ala Ile Arg Val Gly Asp Lys Val Pro Tyr Asp
    510                 515                 520

atc tgc aga ccc gac cac tcg gtg ctg acc ctg cac ctg ccg gtg aca     1816
Ile Cys Arg Pro Asp His Ser Val Leu Thr Leu His Leu Pro Val Thr
525                 530                 535                 540

gcc tcc gtg agg gaa gtg atg gca gct ttg gcc cat gag gac cac tgg     1864
Ala Ser Val Arg Glu Val Met Ala Ala Leu Ala His Glu Asp His Trp
                545                 550                 555

acc aag ggg cag gtg ctg gta aag gtc aat tct gcc ggt gat gtc gtt     1912
Thr Lys Gly Gln Val Leu Val Lys Val Asn Ser Ala Gly Asp Val Val
            560                 565                 570

ggc ttg cag cca gat gcc cgc ggt gtg gcc aca tcc ctg ggg ctc aat     1960
Gly Leu Gln Pro Asp Ala Arg Gly Val Ala Thr Ser Leu Gly Leu Asn
        575                 580                 585

gag cgg atc ttt gtt gtc gac cca cag gaa gtg cac gag ctg acc cca     2008
Glu Arg Ile Phe Val Val Asp Pro Gln Glu Val His Glu Leu Thr Pro
    590                 595                 600

cac cct gag cag ctg ggg ccc act ctg ggt tct tct gag atg ctg gac     2056
His Pro Glu Gln Leu Gly Pro Thr Leu Gly Ser Ser Glu Met Leu Asp
605                 610                 615                 620

cta gtg agt gcc aag gac ctg gca ggc cag ctc aca gag cat gac tgg     2104
Leu Val Ser Ala Lys Asp Leu Ala Gly Gln Leu Thr Glu His Asp Trp
                625                 630                 635

aac ctc ttc aac agg atc cac cag gtg gag ctg atc cac tat gta ctg     2152
Asn Leu Phe Asn Arg Ile His Gln Val Glu Leu Ile His Tyr Val Leu
            640                 645                 650

ggc ccc cag cac ctg cgg gac gtc acc act gca aac ctg gag cgc ttc     2200
Gly Pro Gln His Leu Arg Asp Val Thr Thr Ala Asn Leu Glu Arg Phe
        655                 660                 665

atg cga cgc ttc aac gag ctg cag tac tgg gtg gcc acc gaa ctc tgt     2248
Met Arg Arg Phe Asn Glu Leu Gln Tyr Trp Val Ala Thr Glu Leu Cys
    670                 675                 680

ctc tgc ccg gtt cct ggc ccc cgg gct cag cta ctc cgg aag ttc atc     2296
Leu Cys Pro Val Pro Gly Pro Arg Ala Gln Leu Leu Arg Lys Phe Ile
685                 690                 695                 700

aag ctg gca gcc cac ctc aag gag cag aag aat ctc aac tct ttc ttt     2344
Lys Leu Ala Ala His Leu Lys Glu Gln Lys Asn Leu Asn Ser Phe Phe
                705                 710                 715

gcg gtc atg ttt ggc ctc agc aac tcg gcc atc agc cgc ctg gcc cac     2392
Ala Val Met Phe Gly Leu Ser Asn Ser Ala Ile Ser Arg Leu Ala His
            720                 725                 730
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acc tgg gag cgt ctg ccc cat aaa gta cgg aag ctg tac tcg gcc ctg     2440
Thr Trp Glu Arg Leu Pro His Lys Val Arg Lys Leu Tyr Ser Ala Leu
        735                 740                 745

gaa agg ttg ctg gac cct tcc tgg aac cac cga gtg tac cga ttg gct     2488
Glu Arg Leu Leu Asp Pro Ser Trp Asn His Arg Val Tyr Arg Leu Ala
    750                 755                 760

ctc acc aag ctc tct cct cct gtc atc cct ttc atg ccc ctg cta ctc     2536
Leu Thr Lys Leu Ser Pro Pro Val Ile Pro Phe Met Pro Leu Leu Leu
765                 770                 775                 780

aaa gac atg acc ttc att cat gaa ggg aac cac aca ctg gta gaa aac     2584
Lys Asp Met Thr Phe Ile His Glu Gly Asn His Thr Leu Val Glu Asn
                785                 790                 795

ctc atc aac ttt gag aag atg cga atg atg gcc aga gcc gtg cgg atg     2632
Leu Ile Asn Phe Glu Lys Met Arg Met Met Ala Arg Ala Val Arg Met
            800                 805                 810

ctc cac cac tgc cga agc cac agc acc gcg cct cta tca cca ctc aga     2680
Leu His His Cys Arg Ser His Ser Thr Ala Pro Leu Ser Pro Leu Arg
        815                 820                 825

agc cgg gtt tcc cac atc cac gag gac agc cag gca tca aga atc tcc     2728
Ser Arg Val Ser His Ile His Glu Asp Ser Gln Ala Ser Arg Ile Ser
    830                 835                 840

aca tgt tcc gag cag tcc ctg agc acc cgg agt cca gcc agc acc tgg     2776
Thr Cys Ser Glu Gln Ser Leu Ser Thr Arg Ser Pro Ala Ser Thr Trp
845                 850                 855                 860

gct tat gtc cag cag ctg aag gtc att gac aac cag cgg gaa ctg tcc     2824
Ala Tyr Val Gln Gln Leu Lys Val Ile Asp Asn Gln Arg Glu Leu Ser
                865                 870                 875

cgc ctc tcc cgg gaa ctg gaa cca tgaggaagga ctggctggag caggcacttc    2878
Arg Leu Ser Arg Glu Leu Glu Pro
            880

tctcagagaa agccagagcc tgtgcaacca agaggtccag aggccagcca cagctgggca   2938

gggctctcca cagagcggac tcaaggccct ggagtgggca gtgtcgaggc agctgtcctc   2998

tgtgatgact gtcagctgtg aagatctttg atgttcacgg ccaaggaaaa ggggccattg   3058

aggccccaga ggggtaggag agctgggagg tgcaggactc tggttcagta gagagccctc   3118

ccaccgggct ttctgcatgt ctgtatgtct gtacatgcag ctgtgtgtcc tggatgccag   3178

gccctgtgct tgtattcaca ggagccagcg agctcacatc tgcatggtgt gtgtgtgtgt   3238

gtgtgtgtgt gtgtgtgtgt gtgtgtgtga gcactgggtg gtgccttgcc tgggagaggg   3298

tggggagttc tgctattctc accacacatc tgagataaac agctgggtgt gggcaaaaaa   3358
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aaaaaaaaaa aaaaa 3373

<210> 10
<211> 884
<212> PRT
<213> Rattus norvegicus

<400> 10

Met Val Leu Lys Arg Met His Arg Pro Arg Cys Cys Ser Tyr Gln Leu
1 5 10 15

Val Phe Glu His Arg Arg Pro Ser Cys Ile Gln Gly Leu Arg Trp Thr
20 25 30

Pro Leu Thr Asn Ser Glu Gly Ser Leu Asp Phe Arg Val Ser Leu Glu
35 40 45

Gln Ala Thr Thr Glu His Val His Lys Ala Gly Lys Leu Leu Tyr Arg
50 55 60

His Leu Leu Ala Thr Tyr Pro Thr Leu Ile Arg Asp Arg Lys Tyr His
65 70 75 80

Leu Arg Leu His Arg Gln Cys Cys Ser Gly Arg Glu Leu Val Asp Gly
85 90 95

Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser Gln Ala Val Gly
100 105 110

Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys His Val Lys His
115 120 125

Asp Trp Thr Phe Gln Asp Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly
130 135 140

Pro Glu Pro Gln Pro Ala Gly Thr His Asp Val Glu Glu Glu Leu Val
145 150 155 160

Glu Ala Met Ala Leu Leu Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr
165 170 175

Val Ala Leu Arg Lys Ser Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp
180 185 190

```
Leu Ile Phe Glu Glu Leu Val His Ile Lys Ala Val Ala His Leu Ser
        195                 200                 205

Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu Phe Glu Pro His
    210                 215                 220

Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser
225                 230                 235                 240

Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn Val Val Thr Arg Gly Lys
                245                 250                 255

Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe Gly Gln Leu Ala
            260                 265                 270

Leu Val Asn Asp Ala Pro Arg Ala Ala Thr Ile Ile Leu Arg Glu Asn
        275                 280                 285

Asn Cys His Phe Leu Arg Val Asp Lys Gln Asp Phe Asn Arg Ile Ile
    290                 295                 300

Lys Asp Val Glu Ala Lys Thr Met Arg Leu Glu Glu His Gly Lys Val
305                 310                 315                 320

Val Leu Val Leu Glu Arg Thr Ser Gln Gly Ala Gly Pro Ser Arg Pro
                325                 330                 335

Pro Thr Pro Gly Arg Asn Arg Tyr Thr Val Met Ser Gly Thr Pro Glu
            340                 345                 350

Lys Ile Leu Glu Leu Leu Leu Glu Ala Met Arg Pro Asp Ser Ser Ala
        355                 360                 365

His Asp Pro Thr Glu Thr Phe Leu Ser Asp Phe Leu Leu Thr His Ser
    370                 375                 380

Val Phe Met Pro Cys Thr Gln Leu Phe Ala Ala Leu Leu His His Phe
385                 390                 395                 400

His Val Glu Pro Ser Glu Pro Ala Gly Gly Ser Glu Gln Glu Arg Ser
                405                 410                 415
```

```
Thr Tyr Ile Cys Asn Lys Arg Gln Gln Ile Leu Arg Leu Val Ser Arg
            420                 425                 430

Trp Val Ala Leu Tyr Ser Pro Met Leu Arg Ser Asp Pro Val Ala Thr
        435                 440                 445

Ser Phe Leu Gln Lys Leu Ser Asp Leu Val Ser Arg Asp Thr Arg Leu
    450                 455                 460

Ser Asn Leu Leu Arg Glu Gln Tyr Pro Glu Arg Arg Arg His His Arg
465                 470                 475                 480

Leu Glu Asn Gly Cys Gly Asn Val Ser Pro Gln Thr Lys Ala Arg Asn
                485                 490                 495

Ala Pro Val Trp Phe Pro Asn His Glu Glu Pro Leu Pro Ser Ser Ala
            500                 505                 510

Gly Ala Ile Arg Val Gly Asp Lys Val Pro Tyr Asp Ile Cys Arg Pro
        515                 520                 525

Asp His Ser Val Leu Thr Leu His Leu Pro Val Thr Ala Ser Val Arg
    530                 535                 540

Glu Val Met Ala Ala Leu Ala His Glu Asp His Trp Thr Lys Gly Gln
545                 550                 555                 560

Val Leu Val Lys Val Asn Ser Ala Gly Asp Val Val Gly Leu Gln Pro
                565                 570                 575

Asp Ala Arg Gly Val Ala Thr Ser Leu Gly Leu Asn Glu Arg Ile Phe
            580                 585                 590

Val Val Asp Pro Gln Glu Val His Glu Leu Thr Pro His Pro Glu Gln
        595                 600                 605

Leu Gly Pro Thr Leu Gly Ser Ser Glu Met Leu Asp Leu Val Ser Ala
    610                 615                 620

Lys Asp Leu Ala Gly Gln Leu Thr Glu His Asp Trp Asn Leu Phe Asn
625                 630                 635                 640

Arg Ile His Gln Val Glu Leu Ile His Tyr Val Leu Gly Pro Gln His
```

645 650 655

Leu Arg Asp Val Thr Thr Ala Asn Leu Glu Arg Phe Met Arg Arg Phe
660 665 670

Asn Glu Leu Gln Tyr Trp Val Ala Thr Glu Leu Cys Leu Cys Pro Val
675 680 685

Pro Gly Pro Arg Ala Gln Leu Leu Arg Lys Phe Ile Lys Leu Ala Ala
690 695 700

His Leu Lys Glu Gln Lys Asn Leu Asn Ser Phe Phe Ala Val Met Phe
705 710 715 720

Gly Leu Ser Asn Ser Ala Ile Ser Arg Leu Ala His Thr Trp Glu Arg
725 730 735

Leu Pro His Lys Val Arg Lys Leu Tyr Ser Ala Leu Glu Arg Leu Leu
740 745 750

Asp Pro Ser Trp Asn His Arg Val Tyr Arg Leu Ala Leu Thr Lys Leu
755 760 765

Ser Pro Pro Val Ile Pro Phe Met Pro Leu Leu Leu Lys Asp Met Thr
770 775 780

Phe Ile His Glu Gly Asn His Thr Leu Val Glu Asn Leu Ile Asn Phe
785 790 795 800

Glu Lys Met Arg Met Met Ala Arg Ala Val Arg Met Leu His His Cys
805 810 815

Arg Ser His Ser Thr Ala Pro Leu Ser Pro Leu Arg Ser Arg Val Ser
820 825 830

His Ile His Glu Asp Ser Gln Ala Ser Arg Ile Ser Thr Cys Ser Glu
835 840 845

Gln Ser Leu Ser Thr Arg Ser Pro Ala Ser Thr Trp Ala Tyr Val Gln
850 855 860

Gln Leu Lys Val Ile Asp Asn Gln Arg Glu Leu Ser Arg Leu Ser Arg
865 870 875 880

Glu Leu Glu Pro

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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (216)..(2858)

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tgcacggctg tgggagcttg aaaagaaaca tgaaggtggg ctggccaggt gagagctgct 120

ggcaggtggg cctggctgtg gaggatagcc cagctctggg agcaccgcgg gtgggagccc 180

tccctgacgt ggtgccggag gggacactac tcaac atg gtg ttg aga agg atg 233
Met Val Leu Arg Arg Met
1 5

cac cgg ccc cga agc tgc tcc tac cag ctg ctg ctg gag cac cag cat 281
His Arg Pro Arg Ser Cys Ser Tyr Gln Leu Leu Leu Glu His Gln His
10 15 20

ccg agc tgc atc cag ggg ctg cgc tgg aca cca ctc acc aac agc gag 329
Pro Ser Cys Ile Gln Gly Leu Arg Trp Thr Pro Leu Thr Asn Ser Glu
25 30 35

gag tcc ctg gat ttc agc gag agc ctg gag cag gcc tcc aca gag cgg 377
Glu Ser Leu Asp Phe Ser Glu Ser Leu Glu Gln Ala Ser Thr Glu Arg
40 45 50

gtg ctc agg gct ggg agg cag ctg cat cag cat cta ctg gcc acc tgc 425
Val Leu Arg Ala Gly Arg Gln Leu His Gln His Leu Leu Ala Thr Cys
55 60 65 70

cca aac ctc atc cga gac cgg aag tac cac ctt agg ctc tat cgg cag 473
Pro Asn Leu Ile Arg Asp Arg Lys Tyr His Leu Arg Leu Tyr Arg Gln
75 80 85

tgc tgc tct ggc cgg gag ctg gtg gat ggg atc ttg gcc ctg gga ctt 521
Cys Cys Ser Gly Arg Glu Leu Val Asp Gly Ile Leu Ala Leu Gly Leu
90 95 100

ggg gtc cat tcc cgg agc caa gtt gtg gga atc tgc cag gtg ctg ctg 569
Gly Val His Ser Arg Ser Gln Val Val Gly Ile Cys Gln Val Leu Leu
105 110 115

gat gaa ggt gcc ctc tgc cat gtg aaa cac gac tgg gcc ttc cag gac 617
Asp Glu Gly Ala Leu Cys His Val Lys His Asp Trp Ala Phe Gln Asp

```
    120                 125                 130

cga gat gcc caa ttc tac cgg ttc ccc ggg ccc gag ccc gag ccc gtg      665
Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly Pro Glu Pro Glu Pro Val
135                 140                 145                 150

gga act cat gag atg gag gag gag ttg gcc gaa gct gtg gcc ctg ctc      713
Gly Thr His Glu Met Glu Glu Glu Leu Ala Glu Ala Val Ala Leu Leu
                155                 160                 165

tcc cag cgg ggg cct gac gcc ctg ctc act gtg gca ctt cga aag ccc      761
Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr Val Ala Leu Arg Lys Pro
            170                 175                 180

cca ggt cag cgc acg gat gaa gag ctg gac ctc atc ttt gag gag ctg      809
Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp Leu Ile Phe Glu Glu Leu
        185                 190                 195

ctg cac atc aag gct gtg gcc cac ctc tcc aac tcg gtg aag cga gaa      857
Leu His Ile Lys Ala Val Ala His Leu Ser Asn Ser Val Lys Arg Glu
    200                 205                 210

tta gcg gct gtt ctg ctc ttt gaa cca cac agc aag gca ggg acc gtg      905
Leu Ala Ala Val Leu Leu Phe Glu Pro His Ser Lys Ala Gly Thr Val
215                 220                 225                 230

ttg ttc agc cag ggg gac aag ggc act tcg tgg tac att atc tgg aag      953
Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser Trp Tyr Ile Ile Trp Lys
                235                 240                 245

gga tct gtc aac gtg gtg acc cat ggc aag ggg ctg gtg acc acc ctg     1001
Gly Ser Val Asn Val Val Thr His Gly Lys Gly Leu Val Thr Thr Leu
            250                 255                 260

cat gag gga gat gat ttt gga cag ctg gct ctg gtg aat gat gca ccc     1049
His Glu Gly Asp Asp Phe Gly Gln Leu Ala Leu Val Asn Asp Ala Pro
        265                 270                 275

cgg gca gcc acc atc atc ctg cga gaa tac aac tgt cat ttc ctg cgt     1097
Arg Ala Ala Thr Ile Ile Leu Arg Glu Tyr Asn Cys His Phe Leu Arg
    280                 285                 290

gtg gac aag cag gac ttc aac cgt atc atc aag gat gtg gag gca aag     1145
Val Asp Lys Gln Asp Phe Asn Arg Ile Ile Lys Asp Val Glu Ala Lys
295                 300                 305                 310

acc atg cgg ctg gaa gaa cat ggc aaa gtg gtg ctg gtg ctg gag aga     1193
Thr Met Arg Leu Glu Glu His Gly Lys Val Val Leu Val Leu Glu Arg
                315                 320                 325

gcc tct cag ggc gcc ggc cct tcc cga ccc cca acc cca ggc agg aac     1241
Ala Ser Gln Gly Ala Gly Pro Ser Arg Pro Pro Thr Pro Gly Arg Asn
            330                 335                 340

cgg tat aca gtg atg tct ggc act cca gat aag atc cta gag ctt ctg     1289
Arg Tyr Thr Val Met Ser Gly Thr Pro Asp Lys Ile Leu Glu Leu Leu
        345                 350                 355
```

```
ttg gag gcc atg gga cta gat tcc agt gct cat gac cca aaa gaa aca    1337
Leu Glu Ala Met Gly Leu Asp Ser Ser Ala His Asp Pro Lys Glu Thr
    360                 365                 370

ttc ctc agc gac ttc ctc ctg acc cac agg gtc ttc atg ccc agc gcc    1385
Phe Leu Ser Asp Phe Leu Leu Thr His Arg Val Phe Met Pro Ser Ala
375                 380                 385                 390

caa ctc tgc gct gcc ctt ctg cac cac ttc cat gtg gag cct gcg ggt    1433
Gln Leu Cys Ala Ala Leu Leu His His Phe His Val Glu Pro Ala Gly
                395                 400                 405

ggc agc gag cag gag cgc agc acc tac gtc tgc aac aag agg cag cag    1481
Gly Ser Glu Gln Glu Arg Ser Thr Tyr Val Cys Asn Lys Arg Gln Gln
            410                 415                 420

atc ttg cgg ctg gtc agc cag tgg gtg gcc ctg tat ggc tcc atg ctc    1529
Ile Leu Arg Leu Val Ser Gln Trp Val Ala Leu Tyr Gly Ser Met Leu
        425                 430                 435

cac act gac cct gtg gcc acc agc ttc ctc cac aaa ctc tca gac ctg    1577
His Thr Asp Pro Val Ala Thr Ser Phe Leu His Lys Leu Ser Asp Leu
    440                 445                 450

gtg ggc agg gac acc cga ctc agc aac ctg ctg agg gag cag tgg cca    1625
Val Gly Arg Asp Thr Arg Leu Ser Asn Leu Leu Arg Glu Gln Trp Pro
455                 460                 465                 470

gag agg cgg cga tgc cac agg ttg gag aat ggc tgt ggg aat gca tct    1673
Glu Arg Arg Arg Cys His Arg Leu Glu Asn Gly Cys Gly Asn Ala Ser
                475                 480                 485

cct cag atg aag gcc cgg aac ttg cct gtt tgg ctc ccc aac cag gac    1721
Pro Gln Met Lys Ala Arg Asn Leu Pro Val Trp Leu Pro Asn Gln Asp
            490                 495                 500

gag ccc ctt cct ggc agc agc tgt gcc atc caa gtt ggg gat aaa gtc    1769
Glu Pro Leu Pro Gly Ser Ser Cys Ala Ile Gln Val Gly Asp Lys Val
        505                 510                 515

ccc tat gac atc tgc cgg cca gac cac tca gtg ttg acc ctg cag ctg    1817
Pro Tyr Asp Ile Cys Arg Pro Asp His Ser Val Leu Thr Leu Gln Leu
    520                 525                 530

cct gtg aca gcc tcc gtg aga gag gtg atg gca gcg ttg gcc cag gag    1865
Pro Val Thr Ala Ser Val Arg Glu Val Met Ala Ala Leu Ala Gln Glu
535                 540                 545                 550

gat ggc tgg acc aag ggg cag gtg ctg gtg aag gtc aat tct gca ggt    1913
Asp Gly Trp Thr Lys Gly Gln Val Leu Val Lys Val Asn Ser Ala Gly
                555                 560                 565

gat gcc att ggc ctg cag cca gat gcc cgt ggt gtg gcc aca tct ctg    1961
Asp Ala Ile Gly Leu Gln Pro Asp Ala Arg Gly Val Ala Thr Ser Leu
            570                 575                 580
```

```
ggg ctc aat gag cgt ctc ttt gtt gtc aac cca cag gaa gtg cat gag     2009
Gly Leu Asn Glu Arg Leu Phe Val Val Asn Pro Gln Glu Val His Glu
        585                 590                 595

ctg atc cca cac cct gac cag ctg ggg ccc act gtg ggc tct gct gag     2057
Leu Ile Pro His Pro Asp Gln Leu Gly Pro Thr Val Gly Ser Ala Glu
    600                 605                 610

ggg ctg gac ctg gtg agt gcc aag gac ctg gca ggc cag ctg acg gac     2105
Gly Leu Asp Leu Val Ser Ala Lys Asp Leu Ala Gly Gln Leu Thr Asp
615                 620                 625                 630

cac gac tgg agc ctc ttc aac agt atc cac cag gtg gag ctg atc cac     2153
His Asp Trp Ser Leu Phe Asn Ser Ile His Gln Val Glu Leu Ile His
                635                 640                 645

tat gtg ctg ggc ccc cag cat ctg cgg gat gtc acc acc gcc aac ctg     2201
Tyr Val Leu Gly Pro Gln His Leu Arg Asp Val Thr Thr Ala Asn Leu
            650                 655                 660

gag cgc ttc atg cgc cgc ttc aat gag ctg cag tac tgg gtg gcc acc     2249
Glu Arg Phe Met Arg Arg Phe Asn Glu Leu Gln Tyr Trp Val Ala Thr
        665                 670                 675

gag ctg tgt ctc tgc ccc gtg ccc ggc ccc cgg gcc cag ctg ctc aaa     2297
Glu Leu Cys Leu Cys Pro Val Pro Gly Pro Arg Ala Gln Leu Leu Lys
    680                 685                 690

aag ttc att aag ctg gcg gcc cac ctc aag gag cag aag aat gtc aat     2345
Lys Phe Ile Lys Leu Ala Ala His Leu Lys Glu Gln Lys Asn Val Asn
695                 700                 705                 710

tcc ttc ttt gcc gtc atg ttt ggc ctc agc aac tcg ccc atc agc cgc     2393
Ser Phe Phe Ala Val Met Phe Gly Leu Ser Asn Ser Pro Ile Ser Arg
                715                 720                 725

cta gcc cac acc tgg gag cgg ctg cct cac aaa gtc cgg aag ctg tac     2441
Leu Ala His Thr Trp Glu Arg Leu Pro His Lys Val Arg Lys Leu Tyr
            730                 735                 740

tcc gcc ctc gag agg ctg ctg gat ccc tca tgg aac cac cgg gta tac     2489
Ser Ala Leu Glu Arg Leu Leu Asp Pro Ser Trp Asn His Arg Val Tyr
        745                 750                 755

cga ctg gcc ctc gcc aag ctc tcc cct cct gtc atc ccc ttc atg ccc     2537
Arg Leu Ala Leu Ala Lys Leu Ser Pro Pro Val Ile Pro Phe Met Pro
    760                 765                 770

ctt ctt ctc aaa gac atg acc ttc att cat gag gga aac cac aca cta     2585
Leu Leu Leu Lys Asp Met Thr Phe Ile His Glu Gly Asn His Thr Leu
775                 780                 785                 790

gtg gag aat ctc atc aac ttt gag aag atg aga atg atg gcc aga gcc     2633
Val Glu Asn Leu Ile Asn Phe Glu Lys Met Arg Met Met Ala Arg Ala
                795                 800                 805

gcg cgg atg ctg cac cac tgc cga agc cac aac cct gtg cct ctc tca     2681
```

```
Ala Arg Met Leu His His Cys Arg Ser His Asn Pro Val Pro Leu Ser
            810                 815                 820

cca ctc aga agc cga gtt tcc cac ctc cac gag gac agc cag gtg gcg     2729
Pro Leu Arg Ser Arg Val Ser His Leu His Glu Asp Ser Gln Val Ala
        825                 830                 835

agg att tcc aca tgc tcg gag cag tcc ctg agc acc cgg agt cca gcc     2777
Arg Ile Ser Thr Cys Ser Glu Gln Ser Leu Ser Thr Arg Ser Pro Ala
    840                 845                 850

agc acc tgg gct tat gtc cag cag ctg aag gtc att gac aac cag cgg     2825
Ser Thr Trp Ala Tyr Val Gln Gln Leu Lys Val Ile Asp Asn Gln Arg
855                 860                 865                 870

gaa ctc tcc cgc ctg tcc cga gag ctg gag cca tgaggagggg ctgggactgg   2878
Glu Leu Ser Arg Leu Ser Arg Glu Leu Glu Pro
                875                 880

agctggagca ggcacttgca gccgggaaag ccagggtgtg ccgggccaag atactcacag   2938

gctggccaca gctgggcaag gctctccgtg gagtggactc gagtccctgg agcaggcagt   2998

gtggaggcag ccatcccctg tgatgactgg cagctaagga ggacctcgga gtggaccaaa   3058

gccaggaata acgaatgacc aagggccaag gaagggagga cagagaggcc ccaggagtgg   3118

gtggagagtg gagtgcgctg ggacgttgtg tgcaatagag aggtctccac accagatgtc   3178

ttccagattc tgtgcctctg gctttgttgt ccagccaggc ctgcagttta ttttcacagt   3238

ggacagagag agagagagag gctgcatgtg tgtaccgtgt gtggcaaggg cagggccttg   3298

gcctggggca ggggcccctg ctttctttcc acagctttct tccaacagca ggcagtgggg   3358

ctgcgggcct gaaaaaaaaa aaaaaaaaaa aaaaaa                             3394
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<210> 12
<211> 881
<212> PRT
<213> Homo sapiens

<400> 12

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Met Val Leu Arg Arg Met His Arg Pro Arg Ser Cys Ser Tyr Gln Leu
1               5                   10                  15

Leu Leu Glu His Gln His Pro Ser Cys Ile Gln Gly Leu Arg Trp Thr
            20                  25                  30

Pro Leu Thr Asn Ser Glu Glu Ser Leu Asp Phe Ser Glu Ser Leu Glu
        35                  40                  45
```

```
Gln Ala Ser Thr Glu Arg Val Leu Arg Ala Gly Arg Gln Leu His Gln
    50                  55                  60

His Leu Leu Ala Thr Cys Pro Asn Leu Ile Arg Asp Arg Lys Tyr His
65                  70                  75                  80

Leu Arg Leu Tyr Arg Gln Cys Cys Ser Gly Arg Glu Leu Val Asp Gly
                85                  90                  95

Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser Gln Val Val Gly
            100                 105                 110

Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys His Val Lys His
        115                 120                 125

Asp Trp Ala Phe Gln Asp Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly
    130                 135                 140

Pro Glu Pro Glu Pro Val Gly Thr His Glu Met Glu Glu Glu Leu Ala
145                 150                 155                 160

Glu Ala Val Ala Leu Leu Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr
                165                 170                 175

Val Ala Leu Arg Lys Pro Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp
            180                 185                 190

Leu Ile Phe Glu Glu Leu Leu His Ile Lys Ala Val Ala His Leu Ser
        195                 200                 205

Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu Phe Glu Pro His
    210                 215                 220

Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser
225                 230                 235                 240

Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn Val Val Thr His Gly Lys
                245                 250                 255

Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe Gly Gln Leu Ala
            260                 265                 270

Leu Val Asn Asp Ala Pro Arg Ala Ala Thr Ile Ile Leu Arg Glu Tyr
```

```
        275                 280                 285

Asn Cys His Phe Leu Arg Val Asp Lys Gln Asp Phe Asn Arg Ile Ile
    290                 295                 300

Lys Asp Val Glu Ala Lys Thr Met Arg Leu Glu Glu His Gly Lys Val
305                 310                 315                 320

Val Leu Val Leu Glu Arg Ala Ser Gln Gly Ala Gly Pro Ser Arg Pro
                325                 330                 335

Pro Thr Pro Gly Arg Asn Arg Tyr Thr Val Met Ser Gly Thr Pro Asp
            340                 345                 350

Lys Ile Leu Glu Leu Leu Leu Glu Ala Met Gly Leu Asp Ser Ser Ala
        355                 360                 365

His Asp Pro Lys Glu Thr Phe Leu Ser Asp Phe Leu Leu Thr His Arg
    370                 375                 380

Val Phe Met Pro Ser Ala Gln Leu Cys Ala Ala Leu Leu His His Phe
385                 390                 395                 400

His Val Glu Pro Ala Gly Gly Ser Glu Gln Glu Arg Ser Thr Tyr Val
                405                 410                 415

Cys Asn Lys Arg Gln Gln Ile Leu Arg Leu Val Ser Gln Trp Val Ala
            420                 425                 430

Leu Tyr Gly Ser Met Leu His Thr Asp Pro Val Ala Thr Ser Phe Leu
        435                 440                 445

His Lys Leu Ser Asp Leu Val Gly Arg Asp Thr Arg Leu Ser Asn Leu
    450                 455                 460

Leu Arg Glu Gln Trp Pro Glu Arg Arg Arg Cys His Arg Leu Glu Asn
465                 470                 475                 480

Gly Cys Gly Asn Ala Ser Pro Gln Met Lys Ala Arg Asn Leu Pro Val
                485                 490                 495

Trp Leu Pro Asn Gln Asp Glu Pro Leu Pro Gly Ser Ser Cys Ala Ile
            500                 505                 510
```

```
Gln Val Gly Asp Lys Val Pro Tyr Asp Ile Cys Arg Pro Asp His Ser
        515                 520                 525

Val Leu Thr Leu Gln Leu Pro Val Thr Ala Ser Val Arg Glu Val Met
    530                 535                 540

Ala Ala Leu Ala Gln Glu Asp Gly Trp Thr Lys Gly Gln Val Leu Val
545                 550                 555                 560

Lys Val Asn Ser Ala Gly Asp Ala Ile Gly Leu Gln Pro Asp Ala Arg
                565                 570                 575

Gly Val Ala Thr Ser Leu Gly Leu Asn Glu Arg Leu Phe Val Val Asn
            580                 585                 590

Pro Gln Glu Val His Glu Leu Ile Pro His Pro Asp Gln Leu Gly Pro
        595                 600                 605

Thr Val Gly Ser Ala Glu Gly Leu Asp Leu Val Ser Ala Lys Asp Leu
    610                 615                 620

Ala Gly Gln Leu Thr Asp His Asp Trp Ser Leu Phe Asn Ser Ile His
625                 630                 635                 640

Gln Val Glu Leu Ile His Tyr Val Leu Gly Pro Gln His Leu Arg Asp
                645                 650                 655

Val Thr Thr Ala Asn Leu Glu Arg Phe Met Arg Arg Phe Asn Glu Leu
            660                 665                 670

Gln Tyr Trp Val Ala Thr Glu Leu Cys Leu Cys Pro Val Pro Gly Pro
        675                 680                 685

Arg Ala Gln Leu Leu Lys Lys Phe Ile Lys Leu Ala Ala His Leu Lys
    690                 695                 700

Glu Gln Lys Asn Val Asn Ser Phe Phe Ala Val Met Phe Gly Leu Ser
705                 710                 715                 720

Asn Ser Pro Ile Ser Arg Leu Ala His Thr Trp Glu Arg Leu Pro His
                725                 730                 735
```

```
Lys Val Arg Lys Leu Tyr Ser Ala Leu Glu Arg Leu Leu Asp Pro Ser
            740                 745                 750

Trp Asn His Arg Val Tyr Arg Leu Ala Leu Ala Lys Leu Ser Pro Pro
        755                 760                 765

Val Ile Pro Phe Met Pro Leu Leu Leu Lys Asp Met Thr Phe Ile His
    770                 775                 780

Glu Gly Asn His Thr Leu Val Glu Asn Leu Ile Asn Phe Glu Lys Met
785                 790                 795                 800

Arg Met Met Ala Arg Ala Ala Arg Met Leu His His Cys Arg Ser His
                805                 810                 815

Asn Pro Val Pro Leu Ser Pro Leu Arg Ser Arg Val Ser His Leu His
            820                 825                 830

Glu Asp Ser Gln Val Ala Arg Ile Ser Thr Cys Ser Glu Gln Ser Leu
        835                 840                 845

Ser Thr Arg Ser Pro Ala Ser Thr Trp Ala Tyr Val Gln Gln Leu Lys
    850                 855                 860

Val Ile Asp Asn Gln Arg Glu Leu Ser Arg Leu Ser Arg Glu Leu Glu
865                 870                 875                 880

Pro
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<210> 13
<211> 4109
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (216)..(1883)

<400> 13
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tgcacggctg tgggagcttg aaaagaaaca tgaaggtggg ctggccaggt gagagctgct 120

ggcaggtggg cctggctgtg gaggatagcc cagctctggg agcaccgcgg gtgggagccc 180

```
tccctgacgt ggtgccggag gggacactac tcaac atg gtg ttg aga agg atg       233
                                        Met Val Leu Arg Arg Met
                                        1               5

cac cgg ccc cga agc tgc tcc tac cag ctg ctg ctg gag cac cag cat      281
His Arg Pro Arg Ser Cys Ser Tyr Gln Leu Leu Leu Glu His Gln His
            10                  15                  20

ccg agc tgc atc cag ggg ctg cgc tgg aca cca ctc acc aac agc gag      329
Pro Ser Cys Ile Gln Gly Leu Arg Trp Thr Pro Leu Thr Asn Ser Glu
        25                  30                  35

gag tcc ctg gat ttc agc gag agc ctg gag cag gcc tcc aca gag cgg      377
Glu Ser Leu Asp Phe Ser Glu Ser Leu Glu Gln Ala Ser Thr Glu Arg
    40                  45                  50

gtg ctc agg gct ggg agg cag ctg cat cag cat cta ctg gcc acc tgc      425
Val Leu Arg Ala Gly Arg Gln Leu His Gln His Leu Leu Ala Thr Cys
55                  60                  65                  70

cca aac ctc atc cga gac cgg aag tac cac ctt agg ctc tat cgg cag      473
Pro Asn Leu Ile Arg Asp Arg Lys Tyr His Leu Arg Leu Tyr Arg Gln
                75                  80                  85

tgc tgc tct ggc cgg gag ctg gtg gat ggg atc ttg gcc ctg gga ctt      521
Cys Cys Ser Gly Arg Glu Leu Val Asp Gly Ile Leu Ala Leu Gly Leu
            90                  95                  100

ggg gtc cat tcc cgg agc caa gtt gtg gga atc tgc cag gtg ctg ctg      569
Gly Val His Ser Arg Ser Gln Val Val Gly Ile Cys Gln Val Leu Leu
        105                 110                 115

gat gaa ggt gcc ctc tgc cat gtg aaa cac gac tgg gcc ttc cag gac      617
Asp Glu Gly Ala Leu Cys His Val Lys His Asp Trp Ala Phe Gln Asp
    120                 125                 130

cga gat gcc caa ttc tac cgg ttc ccc ggg ccc gag ccc gag ccc gtg      665
Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly Pro Glu Pro Glu Pro Val
135                 140                 145                 150

gga act cat gag atg gag gag gag ttg gcc gaa gct gtg gcc ctg ctc      713
Gly Thr His Glu Met Glu Glu Glu Leu Ala Glu Ala Val Ala Leu Leu
                155                 160                 165

tcc cag cgg ggg cct gac gcc ctg ctc act gtg gca ctt cga aag ccc      761
Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr Val Ala Leu Arg Lys Pro
            170                 175                 180

cca ggt cag cgc acg gat gaa gag ctg gac ctc atc ttt gag gag ctg      809
Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp Leu Ile Phe Glu Glu Leu
        185                 190                 195

ctg cac atc aag gct gtg gcc cac ctc tcc aac tcg gtg aag cga gaa      857
Leu His Ile Lys Ala Val Ala His Leu Ser Asn Ser Val Lys Arg Glu
    200                 205                 210
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tta gcg gct gtt ctg ctc ttt gaa cca cac agc aag gca ggg acc gtg      905
Leu Ala Ala Val Leu Leu Phe Glu Pro His Ser Lys Ala Gly Thr Val
215                 220                 225                 230

ttg ttc agc cag ggg gac aag ggc act tcg tgg tac att atc tgg aag      953
Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser Trp Tyr Ile Ile Trp Lys
                235                 240                 245

gga tct gtc aac gtg gtg acc cat ggc aag ggg ctg gtg acc acc ctg     1001
Gly Ser Val Asn Val Val Thr His Gly Lys Gly Leu Val Thr Thr Leu
            250                 255                 260

cat gag gga gat gat ttt gga cag ctg gct ctg gtg aat gat gca ccc     1049
His Glu Gly Asp Asp Phe Gly Gln Leu Ala Leu Val Asn Asp Ala Pro
        265                 270                 275

cgg gca gcc acc atc atc ctg cga gaa tac aac tgt cat ttc ctg cgt     1097
Arg Ala Ala Thr Ile Ile Leu Arg Glu Tyr Asn Cys His Phe Leu Arg
    280                 285                 290

gtg gac aag cag gac ttc aac cgt atc atc aag gat gtg gag gca aag     1145
Val Asp Lys Gln Asp Phe Asn Arg Ile Ile Lys Asp Val Glu Ala Lys
295                 300                 305                 310

acc atg cgg ctg gaa gaa cat ggc aaa gtg gtg ctg gtg ctg gag aga     1193
Thr Met Arg Leu Glu Glu His Gly Lys Val Val Leu Val Leu Glu Arg
                315                 320                 325

gcc tct cag ggc gcc ggc cct tcc cga ccc cca acc cca ggc agg aac     1241
Ala Ser Gln Gly Ala Gly Pro Ser Arg Pro Pro Thr Pro Gly Arg Asn
            330                 335                 340

cgg tat aca gtg atg tct ggc act cca gat aag atc cta gag ctt ctg     1289
Arg Tyr Thr Val Met Ser Gly Thr Pro Asp Lys Ile Leu Glu Leu Leu
        345                 350                 355

ttg gag gcc atg gga cta gat tcc agt gct cat gac cca aaa gaa aca     1337
Leu Glu Ala Met Gly Leu Asp Ser Ser Ala His Asp Pro Lys Glu Thr
    360                 365                 370

ttc ctc agc gac ttc ctc ctg acc cac agg gtc ttc atg ccc agc gcc     1385
Phe Leu Ser Asp Phe Leu Leu Thr His Arg Val Phe Met Pro Ser Ala
375                 380                 385                 390

caa ctc tgc gct gcc ctt ctg cac cac ttc cat gtg gag cct gcg ggt     1433
Gln Leu Cys Ala Ala Leu Leu His His Phe His Val Glu Pro Ala Gly
                395                 400                 405

ggc agc gag cag gag cgc agc acc tac gtc tgc aac aag agg cag cag     1481
Gly Ser Glu Gln Glu Arg Ser Thr Tyr Val Cys Asn Lys Arg Gln Gln
            410                 415                 420

atc ttg cgg ctg gtc agc cag tgg gtg gcc ctg tat ggc tcc atg ctc     1529
Ile Leu Arg Leu Val Ser Gln Trp Val Ala Leu Tyr Gly Ser Met Leu
        425                 430                 435

cac act gac cct gtg gcc acc agc ttc ctc cag aaa ctc tca gac ctg     1577
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His Thr Asp Pro Val Ala Thr Ser Phe Leu Gln Lys Leu Ser Asp Leu
    440                 445                 450

gtg ggc agg gac acc cga ctc agc aac ctg ctg agg gag cag tgg cca     1625
Val Gly Arg Asp Thr Arg Leu Ser Asn Leu Leu Arg Glu Gln Trp Pro
455                 460                 465                 470

gag agg cgg cga tgc cac agg ttg gag aat ggc tgt ggg aat gca tct     1673
Glu Arg Arg Arg Cys His Arg Leu Glu Asn Gly Cys Gly Asn Ala Ser
                475                 480                 485

cct cag atg aag gtg tct gcc tgg ccc cag ttt ctt tcc tct gct cct     1721
Pro Gln Met Lys Val Ser Ala Trp Pro Gln Phe Leu Ser Ser Ala Pro
            490                 495                 500

cct gga ctg cag gca cct cct tcg ccc cct gac cct gag ggg ctc tgt     1769
Pro Gly Leu Gln Ala Pro Pro Ser Pro Pro Asp Pro Glu Gly Leu Cys
        505                 510                 515

ggg cgt ggg aag ctc tcc tcc cac aga cac acc ctt ggg tct ctg ata     1817
Gly Arg Gly Lys Leu Ser Ser His Arg His Thr Leu Gly Ser Leu Ile
    520                 525                 530

ggt gtt cac ggg gcc ctt gct gca tgt ggt gcc ctg ggc cag gcc gtg     1865
Gly Val His Gly Ala Leu Ala Ala Cys Gly Ala Leu Gly Gln Ala Val
535                 540                 545                 550

cca gga ggc gca gag gcc taaggtggcc tccctcctcg cccactccct            1913
Pro Gly Gly Ala Glu Ala
                555

gactcaatgg gccttttatt ccttttggga ggtaattcat gcccacaggt agagcctggg   1973

agatgaggaa tggtggctgg agttggcccc tgaggcccac ggggctcctg gtggccagtg   2033

ctgtgggagc tcagaggaag gcgaggcccc tccctggaaa gtcagagggg gccccaggcc   2093

attctcagct ggggcttaaa gggaagcaaa gaggggatga gaagatgtga ctgcagccag   2153

gatttggttg aggaatggtg ggagaaagaa ctggaaaggt agattaggtt ggtggtgggg   2213

agggctgcac tgggaataaa atccaggggc ctcaccatcc agcaggctcc ccatggtccc   2273

accctactgt gtgtcccagc ccctgcctgc tggagactct tactggcttc ttctcctccg   2333

caggcgaagc ccgttctccc ctcagggcct ttgcacttat cccttagcct ggaagggtct   2393

ttctctggct ctgcctggca ggatccttct cgttctcatc tcagccaaat gctgggttcc   2453

cagacaggcc ccctcccgtt tccctatccg gagcaccctc ccctttctcc caccacgctc   2513

tgccttggtg tcctctgtga ttttttttcaa agcactctcg ccatgtggag ttgttttctt   2573

tgcctacttg ctttctgtcc tttggtatct ctcccatccc actggagagt tgacttccct   2633

cctgcgggcc cccacctccg cttctccttg ctcacatgct gcctggctct tggctgacgc   2693
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tcagaaactg atgtgggctc accctcgcag gctgggcact gcgctaggtg ctgatgctgc 2753

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acccgtgatg tgcagtgaca cgggacactt tccctgaatg tgcactggag tcggctcttc 2873

caactgtagg tccgctgcct taaaccagga aggggaagag ccaactccag tgcagattca 2933

gggaaagtgt cccgtgtaag cgactactgg agttgagagc tgcaggggggc aagggtggag 2993

gaagaagagg attcctggtg ggcaaaccca ggaggaaagg gaacccagga ggaggatccc 3053

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gccaaggttg gcaaagtctg atttgtgttt tgaataggtc agctaaagag cctgggcttt 3233

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ccattggagt agtaaggagt gaggcctcgt gggcaggtgg aactggagtt agcctgggca 3413

ggggaggagg gggcacagaa gacccacttc aaagaagaat cttcaaagca agatgacaag 3473

ctacggaagt gtggaggagc ctggagctgg ggagaatggc tggggaacag agtggtctgg 3533

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gaaggatgca gggggttttt gagaccaggg tttggaagag agttcagcac tgctggtagt 3653

tttgggaatc acccatgtgc aggcgacaca tgaggcagta aggaactctg caggggtccc 3713

tgagatttgg aaatgtaggg aagagcaatg gattgaggtc cgaacctgga ggatctgcta 3773

tacgcagagc tgggaggagg gacagagtca gtaccagagt cggaaaaaag cagggtggga 3833

aggggaacct gagtcaggag acttgcctgg caggcgctgc cctgccagca gaggcctgac 3893

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ggagcacaga aggggaaagg agcaggaggg attccaactc tgccagttag cagctgtgtg 4013

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aaaaataata cttttgtcaa aaaaaaaaaa aaaaaa 4109

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<212> PRT
<213> Homo sapiens

<400> 14

Met Val Leu Arg Arg Met His Arg Pro Arg Ser Cys Ser Tyr Gln Leu

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1               5                   10                  15

Leu Leu Glu His Gln His Pro Ser Cys Ile Gln Gly Leu Arg Trp Thr
            20                  25                  30

Pro Leu Thr Asn Ser Glu Glu Ser Leu Asp Phe Ser Glu Ser Leu Glu
        35                  40                  45

Gln Ala Ser Thr Glu Arg Val Leu Arg Ala Gly Arg Gln Leu His Gln
    50                  55                  60

His Leu Leu Ala Thr Cys Pro Asn Leu Ile Arg Asp Arg Lys Tyr His
65                  70                  75                  80

Leu Arg Leu Tyr Arg Gln Cys Cys Ser Gly Arg Glu Leu Val Asp Gly
                85                  90                  95

Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser Gln Val Val Gly
            100                 105                 110

Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys His Val Lys His
        115                 120                 125

Asp Trp Ala Phe Gln Asp Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly
    130                 135                 140

Pro Glu Pro Glu Pro Val Gly Thr His Glu Met Glu Glu Glu Leu Ala
145                 150                 155                 160

Glu Ala Val Ala Leu Leu Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr
                165                 170                 175

Val Ala Leu Arg Lys Pro Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp
            180                 185                 190

Leu Ile Phe Glu Glu Leu Leu His Ile Lys Ala Val Ala His Leu Ser
        195                 200                 205

Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu Phe Glu Pro His
    210                 215                 220

Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser
225                 230                 235                 240
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Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn Val Val Thr His Gly Lys
                245                 250                 255

Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe Gly Gln Leu Ala
            260                 265                 270

Leu Val Asn Asp Ala Pro Arg Ala Ala Thr Ile Ile Leu Arg Glu Tyr
        275                 280                 285

Asn Cys His Phe Leu Arg Val Asp Lys Gln Asp Phe Asn Arg Ile Ile
    290                 295                 300

Lys Asp Val Glu Ala Lys Thr Met Arg Leu Glu Glu His Gly Lys Val
305                 310                 315                 320

Val Leu Val Leu Glu Arg Ala Ser Gln Gly Ala Gly Pro Ser Arg Pro
                325                 330                 335

Pro Thr Pro Gly Arg Asn Arg Tyr Thr Val Met Ser Gly Thr Pro Asp
            340                 345                 350

Lys Ile Leu Glu Leu Leu Leu Glu Ala Met Gly Leu Asp Ser Ser Ala
        355                 360                 365

His Asp Pro Lys Glu Thr Phe Leu Ser Asp Phe Leu Leu Thr His Arg
    370                 375                 380

Val Phe Met Pro Ser Ala Gln Leu Cys Ala Ala Leu Leu His His Phe
385                 390                 395                 400

His Val Glu Pro Ala Gly Gly Ser Glu Gln Glu Arg Ser Thr Tyr Val
                405                 410                 415

Cys Asn Lys Arg Gln Gln Ile Leu Arg Leu Val Ser Gln Trp Val Ala
            420                 425                 430

Leu Tyr Gly Ser Met Leu His Thr Asp Pro Val Ala Thr Ser Phe Leu
        435                 440                 445

Gln Lys Leu Ser Asp Leu Val Gly Arg Asp Thr Arg Leu Ser Asn Leu
    450                 455                 460
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Leu Arg Glu Gln Trp Pro Glu Arg Arg Arg Cys His Arg Leu Glu Asn
465                 470                 475                 480

Gly Cys Gly Asn Ala Ser Pro Gln Met Lys Val Ser Ala Trp Pro Gln
                485                 490                 495

Phe Leu Ser Ser Ala Pro Pro Gly Leu Gln Ala Pro Pro Ser Pro Pro
            500                 505                 510

Asp Pro Glu Gly Leu Cys Gly Arg Gly Lys Leu Ser Ser His Arg His
        515                 520                 525

Thr Leu Gly Ser Leu Ile Gly Val His Gly Ala Leu Ala Ala Cys Gly
    530                 535                 540

Ala Leu Gly Gln Ala Val Pro Gly Gly Ala Glu Ala
545                 550                 555
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<210> 15
<211> 1966
<212> DNA
<213> Rattus norvegicus

<220>
<221> CDS
<222> (3)..(875)

<400> 15

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   Gly Val Leu Lys Pro Asn Asp Val Ser Val Phe Thr Thr Leu Thr
   1               5                  10                  15

att aat gga cgc ctg ttt gcc tgc ccg cga gag caa ttc gac tca ctg       95
Ile Asn Gly Arg Leu Phe Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu
               20                  25                  30

act ccc ttg cca gaa cag gag ggc ccg acc act ggg aca gtg ggg acg      143
Thr Pro Leu Pro Glu Gln Glu Gly Pro Thr Thr Gly Thr Val Gly Thr
           35                  40                  45

ttt gaa ctg atg agc tcg aaa gac ttg gcg tac cag atg aca acg tat      191
Phe Glu Leu Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Thr Tyr
       50                  55                  60

gac tgg gaa ctc ttc aac tgt gtg ctc gag ctg gag cta atc tac cac      239
Asp Trp Glu Leu Phe Asn Cys Val Leu Glu Leu Glu Leu Ile Tyr His
   65                  70                  75

aca ttt gga agg cat aat ttt aaa aag acc aca gca aac ttg gat ttg      287
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Thr Phe Gly Arg His Asn Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu
80                  85                  90                  95

ttc ctg agg aga ttt aat gaa att cag ttt tgg gtt gtc act gag atc      335
Phe Leu Arg Arg Phe Asn Glu Ile Gln Phe Trp Val Val Thr Glu Ile
                100                 105                 110

tgc ctt tgt tcc cag ctc agc aag cgt gtt cag ctt ttg aaa aaa tgt      383
Cys Leu Cys Ser Gln Leu Ser Lys Arg Val Gln Leu Leu Lys Lys Cys
            115                 120                 125

atc aag ata gcg gct cac tgc aag gag tac aaa aac ttg aat tcc ttc      431
Ile Lys Ile Ala Ala His Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe
        130                 135                 140

ttc ggc atc gtc atg ggg ctc agt aac gtg gct gag agc cgc ctg gca      479
Phe Gly Ile Val Met Gly Leu Ser Asn Val Ala Glu Ser Arg Leu Ala
    145                 150                 155

tta aca tgg gag aaa ctg ccg agc aag ttt aag aag ttc tat gcg gag      527
Leu Thr Trp Glu Lys Leu Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu
160                 165                 170                 175

ttt gag agc tta atg gat cct tcc aga aat cac aag gcg tac agg ctg      575
Phe Glu Ser Leu Met Asp Pro Ser Arg Asn His Lys Ala Tyr Arg Leu
                180                 185                 190

aca gca gct aaa ctg gag ccc ccc ctc atc cct ttc atg ccc ttg ctt      623
Thr Ala Ala Lys Leu Glu Pro Pro Leu Ile Pro Phe Met Pro Leu Leu
            195                 200                 205

att aaa gat atg aca ttt act cat gag ggg aac aag aca ttc att gac      671
Ile Lys Asp Met Thr Phe Thr His Glu Gly Asn Lys Thr Phe Ile Asp
        210                 215                 220

aat cta gta aac ttt gaa aaa atg cgc atg att gca aat act gcc aga      719
Asn Leu Val Asn Phe Glu Lys Met Arg Met Ile Ala Asn Thr Ala Arg
    225                 230                 235

acg gtg cgc tac tac agg agc cag cca ttc aat ccg gat gct gct caa      767
Thr Val Arg Tyr Tyr Arg Ser Gln Pro Phe Asn Pro Asp Ala Ala Gln
240                 245                 250                 255

gct aat aag aac cat cag gat gtc cgg agt tat gta cgg caa tta aat      815
Ala Asn Lys Asn His Gln Asp Val Arg Ser Tyr Val Arg Gln Leu Asn
                260                 265                 270

gtg att gac aac cag aga act tta tca cag atg tca cac aga tta gag      863
Val Ile Asp Asn Gln Arg Thr Leu Ser Gln Met Ser His Arg Leu Glu
            275                 280                 285

cct cgc agg cca tagacatctg cagtgcccag agtgatgctc cgtctccagt          915
Pro Arg Arg Pro
        290

ccacaatctt tcaaaagatg ctgtgtatgc tactactgac tgtgttgcta ctagagaatt    975
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ccccagaatg agcaagagac acctcctgag agcccctcgg ggccacatcc tgctttccga 1035

ccacacagga gaaggatctg tcttgtctaa cgcggacatg ccgtagctta ggaaccatca 1095

gctgtagtca tcttcttcac ggttggcaca ccaccgcagg ctcacgtgaa ggcataacct 1155

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caccttattt ggggtctggg ttctggggag ggtgttgacc ataaaagtcc aaattatcca 1335

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tgaaacatta tgactgttca gtctgtaatt tcggaatgat ctatagaata atatgtttac 1455

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accaaggttc ttaatatcgc cagcgttaag atagaaagta acatttcaga agagcacaat 1575

atacacaaaa catttttca aattgaaata ttttcctggg cattaaaaaa cctttccact 1635

acaaatttat tgttactgat gaaaaaaaaa gcatattttc tggacttaaa tgttattaca 1695

aaaatcttaa ttttcagcaa ttgttttgca ctttcagata gattgtaaat aggttatgca 1755

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<210> 16
<211> 291
<212> PRT
<213> Rattus norvegicus

<400> 16

Gly Val Leu Lys Pro Asn Asp Val Ser Val Phe Thr Thr Leu Thr Ile
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Asn Gly Arg Leu Phe Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu Thr
20 25 30

Pro Leu Pro Glu Gln Glu Gly Pro Thr Thr Gly Thr Val Gly Thr Phe
35 40 45

Glu Leu Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Thr Tyr Asp
50 55 60

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Trp Glu Leu Phe Asn Cys Val Leu Glu Leu Glu Leu Ile Tyr His Thr
65                  70                  75                  80

Phe Gly Arg His Asn Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu Phe
                85                  90                  95

Leu Arg Arg Phe Asn Glu Ile Gln Phe Trp Val Val Thr Glu Ile Cys
            100                 105                 110

Leu Cys Ser Gln Leu Ser Lys Arg Val Gln Leu Leu Lys Lys Cys Ile
        115                 120                 125

Lys Ile Ala Ala His Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe Phe
    130                 135                 140

Gly Ile Val Met Gly Leu Ser Asn Val Ala Glu Ser Arg Leu Ala Leu
145                 150                 155                 160

Thr Trp Glu Lys Leu Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu Phe
                165                 170                 175

Glu Ser Leu Met Asp Pro Ser Arg Asn His Lys Ala Tyr Arg Leu Thr
            180                 185                 190

Ala Ala Lys Leu Glu Pro Pro Leu Ile Pro Phe Met Pro Leu Leu Ile
        195                 200                 205

Lys Asp Met Thr Phe Thr His Glu Gly Asn Lys Thr Phe Ile Asp Asn
    210                 215                 220

Leu Val Asn Phe Glu Lys Met Arg Met Ile Ala Asn Thr Ala Arg Thr
225                 230                 235                 240

Val Arg Tyr Tyr Arg Ser Gln Pro Phe Asn Pro Asp Ala Ala Gln Ala
                245                 250                 255

Asn Lys Asn His Gln Asp Val Arg Ser Tyr Val Arg Gln Leu Asn Val
            260                 265                 270

Ile Asp Asn Gln Arg Thr Leu Ser Gln Met Ser His Arg Leu Glu Pro
        275                 280                 285
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Arg Arg Pro
    290


<210>  17
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<212>  DNA
<213>  Homo sapiens


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<222>  (407)..(2953)

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agggaataac attatttcgc cagggtgata tggaacaaac tggtatgctg cctggcaggg    180

tctttggatg ttaaagtatc tgagaccagc agtcaccagg atgctgtgac catctgtacc    240

ctgggaattg ggacggcctt tggagagtcc attctggaca acacaccccg ccatgcaacc    300

atcgttacca gggagagcag tgaactgctc cgcatcgagc agaaggactt caaggcacta    360

tgggagaaat atcgacagta tatggcagga cttctggctc ctccttatg gta tta        415
                                                    Met Val Leu
                                                    1

tgg aaa cgg gct cta aca atg aca gga ttc ctg aca agg aga aca cac       463
Trp Lys Arg Ala Leu Thr Met Thr Gly Phe Leu Thr Arg Arg Thr His
    5                   10                  15

ctc att gaa cct cac gtt cct ctt cgt cct gct aac acc att acc aag       511
Leu Ile Glu Pro His Val Pro Leu Arg Pro Ala Asn Thr Ile Thr Lys
20                  25                  30                  35

gtc cct tca gag aag atc ctc aga gct gga aaa att tta cga aat gcc       559
Val Pro Ser Glu Lys Ile Leu Arg Ala Gly Lys Ile Leu Arg Asn Ala
                40                  45                  50

att ctc tct cga gca cct cac atg ata aga gat aga aaa tac cac cta       607
Ile Leu Ser Arg Ala Pro His Met Ile Arg Asp Arg Lys Tyr His Leu
            55                  60                  65

aag aca tac aga caa tgc tgt gtg gga act gaa ctg gtg gac tgg atg       655
Lys Thr Tyr Arg Gln Cys Cys Val Gly Thr Glu Leu Val Asp Trp Met
        70                  75                  80

atc gac gag aca cca tgt gtt cac tcc cgg act caa gct gtt ggc atg       703
Ile Asp Glu Thr Pro Cys Val His Ser Arg Thr Gln Ala Val Gly Met
    85                  90                  95

tgg caa gtc ctg tta gaa gat ggt gtt ctc aac cac gtg gac cag gag       751
Trp Gln Val Leu Leu Glu Asp Gly Val Leu Asn His Val Asp Gln Glu
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100                 105                 110                 115

cac cat ttc caa gac ttt tat tta ttc tat cga ttt ctg gat gat gag      799
His His Phe Gln Asp Phe Tyr Leu Phe Tyr Arg Phe Leu Asp Asp Glu
                120                 125                 130

cac gag gat gcc cct ttg cct act gag gag gag aag aag gag tgt gat      847
His Glu Asp Ala Pro Leu Pro Thr Glu Glu Glu Lys Lys Glu Cys Asp
            135                 140                 145

gag gag ctc cag gac acc atg ctg ctg ctg tca cag atg ggc ccc gac      895
Glu Glu Leu Gln Asp Thr Met Leu Leu Leu Ser Gln Met Gly Pro Asp
        150                 155                 160

gcc cac atg agg atg atc ctt cgc aaa cca cct ggc cag agg act gtg      943
Ala His Met Arg Met Ile Leu Arg Lys Pro Pro Gly Gln Arg Thr Val
    165                 170                 175

gat gac cta gag att atc tat gag gag ctt ctt cat att aaa gcc tta      991
Asp Asp Leu Glu Ile Ile Tyr Glu Glu Leu Leu His Ile Lys Ala Leu
180                 185                 190                 195

tcc cat ctt tct acc aca gtg aaa cga gag tta gca ggt gtt ctc att     1039
Ser His Leu Ser Thr Thr Val Lys Arg Glu Leu Ala Gly Val Leu Ile
                200                 205                 210

ttt gag tct cac gcc aaa gga ggg act gtg ttg ttt aac cag ggg gaa     1087
Phe Glu Ser His Ala Lys Gly Gly Thr Val Leu Phe Asn Gln Gly Glu
            215                 220                 225

gaa ggt acc tcc tgg tac att att cta aaa gga tca gtg aat gta gtc     1135
Glu Gly Thr Ser Trp Tyr Ile Ile Leu Lys Gly Ser Val Asn Val Val
        230                 235                 240

att tac ggc aag ggt gtg gtc tgc acc ctg cat gaa gga gat gac ttc     1183
Ile Tyr Gly Lys Gly Val Val Cys Thr Leu His Glu Gly Asp Asp Phe
    245                 250                 255

ggc aag tta gca cta gtg aat gat gcc cca cga gct gcc tct atc gtc     1231
Gly Lys Leu Ala Leu Val Asn Asp Ala Pro Arg Ala Ala Ser Ile Val
260                 265                 270                 275

tta cga gaa gat aac tgc cat ttc tta aga gta gac aag gag gat ttc     1279
Leu Arg Glu Asp Asn Cys His Phe Leu Arg Val Asp Lys Glu Asp Phe
                280                 285                 290

aac cgg atc cta agg gac gtg gag gcg aat aca gtc aga ctt aaa gaa     1327
Asn Arg Ile Leu Arg Asp Val Glu Ala Asn Thr Val Arg Leu Lys Glu
            295                 300                 305

cat gac caa gat gtc ttg gtg ctg gag aag gtc cca gca ggg aac aga     1375
His Asp Gln Asp Val Leu Val Leu Glu Lys Val Pro Ala Gly Asn Arg
        310                 315                 320

gct tct aat caa gga aac tca cag cct cag caa aag tat act gtg atg     1423
Ala Ser Asn Gln Gly Asn Ser Gln Pro Gln Gln Lys Tyr Thr Val Met
    325                 330                 335
```

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tca gga aca cct gaa aaa att tta gag cat ttt cta gaa aca ata cgc     1471
Ser Gly Thr Pro Glu Lys Ile Leu Glu His Phe Leu Glu Thr Ile Arg
340                 345                 350                 355

ctt gag gca act tta aat gaa gca aca gat tct gtt tta aat gac ttt     1519
Leu Glu Ala Thr Leu Asn Glu Ala Thr Asp Ser Val Leu Asn Asp Phe
                360                 365                 370

att atg atg cac tgt gtt ttt atg cca aat acc cag ctt tgc ccg gca     1567
Ile Met Met His Cys Val Phe Met Pro Asn Thr Gln Leu Cys Pro Ala
            375                 380                 385

ctg gtg gcc cac tac cac gca cag cct tca caa ggt aca gaa cag gag     1615
Leu Val Ala His Tyr His Ala Gln Pro Ser Gln Gly Thr Glu Gln Glu
        390                 395                 400

aaa atg gat tat gcc ctc aac aat aag agg cga gtc atc cgc ctg gtt     1663
Lys Met Asp Tyr Ala Leu Asn Asn Lys Arg Arg Val Ile Arg Leu Val
    405                 410                 415

cta cag tgg gct gcc atg tat gga gac ctc ctg caa gag gat gac gta     1711
Leu Gln Trp Ala Ala Met Tyr Gly Asp Leu Leu Gln Glu Asp Asp Val
420                 425                 430                 435

tct atg gcc ttc ctg gag gag ttt tat gta tct gta tca gat gat gcc     1759
Ser Met Ala Phe Leu Glu Glu Phe Tyr Val Ser Val Ser Asp Asp Ala
                440                 445                 450

cgg atg att gct gcc ctc aag gag caa ctg cca gag ttg gag aag att     1807
Arg Met Ile Ala Ala Leu Lys Glu Gln Leu Pro Glu Leu Glu Lys Ile
            455                 460                 465

gtc aag caa atc tca gaa gat gca aag gca cca caa aag aag cac aag     1855
Val Lys Gln Ile Ser Glu Asp Ala Lys Ala Pro Gln Lys Lys His Lys
        470                 475                 480

gtt ctt ttg caa cag ttc aat acg ggc gat gag aga gcc cag aag cgc     1903
Val Leu Leu Gln Gln Phe Asn Thr Gly Asp Glu Arg Ala Gln Lys Arg
    485                 490                 495

cag cct atc cgc ggc tct gat gaa gtt ctg ttt aag gtc tat tgc atg     1951
Gln Pro Ile Arg Gly Ser Asp Glu Val Leu Phe Lys Val Tyr Cys Met
500                 505                 510                 515

gac cac acc tac aca acc att cgg gtg cca gtg gcc act tcg gtg aag     1999
Asp His Thr Tyr Thr Thr Ile Arg Val Pro Val Ala Thr Ser Val Lys
                520                 525                 530

gaa gtc atc agt gca gtt gcc gac aag ctg ggc tcc ggg gag ggc ctg     2047
Glu Val Ile Ser Ala Val Ala Asp Lys Leu Gly Ser Gly Glu Gly Leu
            535                 540                 545

atc ata gtc aag atg agt tcc gga gga gaa aag gtg gtg ctc aaa cct     2095
Ile Ile Val Lys Met Ser Ser Gly Gly Glu Lys Val Val Leu Lys Pro
        550                 555                 560
```

```
aat gat gtt tca gta ttt acg acg ctc acc att aat gga cgc ctg ttt     2143
Asn Asp Val Ser Val Phe Thr Thr Leu Thr Ile Asn Gly Arg Leu Phe
    565                 570                 575

gct tgc ccg cga gag caa ttc gat tca ctg act ccc tta cca gaa cag     2191
Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu Thr Pro Leu Pro Glu Gln
580                 585                 590                 595

gaa ggc cca act gtt gga aca gtg gga act ttt gaa ctg atg agc tcc     2239
Glu Gly Pro Thr Val Gly Thr Val Gly Thr Phe Glu Leu Met Ser Ser
                600                 605                 610

aaa gat tta gca tac cag atg aca att tat gat tgg gaa ctc ttc aac     2287
Lys Asp Leu Ala Tyr Gln Met Thr Ile Tyr Asp Trp Glu Leu Phe Asn
            615                 620                 625

tgc gtg cat gag ctg gag cta atc tat cac aca ttt gga agg cat aat     2335
Cys Val His Glu Leu Glu Leu Ile Tyr His Thr Phe Gly Arg His Asn
        630                 635                 640

ttt aaa aag acc aca gca aac ttg gat ttg ttc ctg agg aga ttt aat     2383
Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu Phe Leu Arg Arg Phe Asn
    645                 650                 655

gaa att cag ttt tgg gtc gtc act gag atc tgc ctt tgt tct cag ctc     2431
Glu Ile Gln Phe Trp Val Val Thr Glu Ile Cys Leu Cys Ser Gln Leu
660                 665                 670                 675

agc aag cgt gtt cag cta tta aaa aaa ttt att aag ata gca gcc cac     2479
Ser Lys Arg Val Gln Leu Leu Lys Lys Phe Ile Lys Ile Ala Ala His
                680                 685                 690

tgt aag gag tat aaa aat ctg aat tcc ttt ttt gcc atc gtc atg gga     2527
Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe Phe Ala Ile Val Met Gly
            695                 700                 705

cta agt aac att gct gtg agc cgc ttg gca cta acg tgg gag aaa ctg     2575
Leu Ser Asn Ile Ala Val Ser Arg Leu Ala Leu Thr Trp Glu Lys Leu
        710                 715                 720

cca agc aag ttc aag aag ttc tat gcg gag ttt gaa agt tta atg gac     2623
Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu Phe Glu Ser Leu Met Asp
    725                 730                 735

cct tca agg aac cac agg gcc tac agg ctg aca gta gct aag ctg gaa     2671
Pro Ser Arg Asn His Arg Ala Tyr Arg Leu Thr Val Ala Lys Leu Glu
740                 745                 750                 755

cct cct ctc atc ccc ttc atg cct ttg ctc att aaa gat atg aca ttt     2719
Pro Pro Leu Ile Pro Phe Met Pro Leu Leu Ile Lys Asp Met Thr Phe
                760                 765                 770

act cat gag ggg aac aag acg ttc att gac aat cta gta aac ttt gaa     2767
Thr His Glu Gly Asn Lys Thr Phe Ile Asp Asn Leu Val Asn Phe Glu
            775                 780                 785

aaa atg cgc atg att gca aat acg gcc aga aca gtg aga tac tac agg     2815
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Lys Met Arg Met Ile Ala Asn Thr Ala Arg Thr Val Arg Tyr Tyr Arg
        790                 795                 800

agc caa ccc ttc aat cct gat gca gct caa gct aat aag aac cat cag     2863
Ser Gln Pro Phe Asn Pro Asp Ala Ala Gln Ala Asn Lys Asn His Gln
    805                 810                 815

gat gtc cgg agt tat gta cgg caa tta aat gtg att gac aac cag aga     2911
Asp Val Arg Ser Tyr Val Arg Gln Leu Asn Val Ile Asp Asn Gln Arg
820                 825                 830                 835

act tta tca cag atg tca cac aga tta gag cct cgt cga cca             2953
Thr Leu Ser Gln Met Ser His Arg Leu Glu Pro Arg Arg Pro
                840                 845

tagacatttc aaatgcccaa agcaacagtt tgtctccagt ccacaatttt caaaaatgcc   3013
```

<210> 18
<211> 849
<212> PRT
<213> Homo sapiens

<400> 18

```
Met Val Leu Trp Lys Arg Ala Leu Thr Met Thr Gly Phe Leu Thr Arg
1               5                   10                  15

Arg Thr His Leu Ile Glu Pro His Val Pro Leu Arg Pro Ala Asn Thr
            20                  25                  30

Ile Thr Lys Val Pro Ser Glu Lys Ile Leu Arg Ala Gly Lys Ile Leu
        35                  40                  45

Arg Asn Ala Ile Leu Ser Arg Ala Pro His Met Ile Arg Asp Arg Lys
    50                  55                  60

Tyr His Leu Lys Thr Tyr Arg Gln Cys Cys Val Gly Thr Glu Leu Val
65                  70                  75                  80

Asp Trp Met Ile Asp Glu Thr Pro Cys Val His Ser Arg Thr Gln Ala
                85                  90                  95

Val Gly Met Trp Gln Val Leu Leu Glu Asp Gly Val Leu Asn His Val
            100                 105                 110

Asp Gln Glu His His Phe Gln Asp Phe Tyr Leu Phe Tyr Arg Phe Leu
        115                 120                 125
```

```
Asp Asp Glu His Glu Asp Ala Pro Leu Pro Thr Glu Glu Glu Lys Lys
    130                 135                 140

Glu Cys Asp Glu Glu Leu Gln Asp Thr Met Leu Leu Leu Ser Gln Met
145                 150                 155                 160

Gly Pro Asp Ala His Met Arg Met Ile Leu Arg Lys Pro Pro Gly Gln
                165                 170                 175

Arg Thr Val Asp Asp Leu Glu Ile Ile Tyr Glu Glu Leu Leu His Ile
            180                 185                 190

Lys Ala Leu Ser His Leu Ser Thr Thr Val Lys Arg Glu Leu Ala Gly
        195                 200                 205

Val Leu Ile Phe Glu Ser His Ala Lys Gly Gly Thr Val Leu Phe Asn
    210                 215                 220

Gln Gly Glu Glu Gly Thr Ser Trp Tyr Ile Ile Leu Lys Gly Ser Val
225                 230                 235                 240

Asn Val Val Ile Tyr Gly Lys Gly Val Val Cys Thr Leu His Glu Gly
                245                 250                 255

Asp Asp Phe Gly Lys Leu Ala Leu Val Asn Asp Ala Pro Arg Ala Ala
            260                 265                 270

Ser Ile Val Leu Arg Glu Asp Asn Cys His Phe Leu Arg Val Asp Lys
        275                 280                 285

Glu Asp Phe Asn Arg Ile Leu Arg Asp Val Glu Ala Asn Thr Val Arg
    290                 295                 300

Leu Lys Glu His Asp Gln Asp Val Leu Val Leu Glu Lys Val Pro Ala
305                 310                 315                 320

Gly Asn Arg Ala Ser Asn Gln Gly Asn Ser Gln Pro Gln Gln Lys Tyr
                325                 330                 335

Thr Val Met Ser Gly Thr Pro Glu Lys Ile Leu Glu His Phe Leu Glu
            340                 345                 350

Thr Ile Arg Leu Glu Ala Thr Leu Asn Glu Ala Thr Asp Ser Val Leu
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        355                 360                 365

Asn Asp Phe Ile Met Met His Cys Val Phe Met Pro Asn Thr Gln Leu
    370                 375                 380

Cys Pro Ala Leu Val Ala His Tyr His Ala Gln Pro Ser Gln Gly Thr
385                 390                 395                 400

Glu Gln Glu Lys Met Asp Tyr Ala Leu Asn Asn Lys Arg Arg Val Ile
                405                 410                 415

Arg Leu Val Leu Gln Trp Ala Ala Met Tyr Gly Asp Leu Leu Gln Glu
            420                 425                 430

Asp Asp Val Ser Met Ala Phe Leu Glu Glu Phe Tyr Val Ser Val Ser
        435                 440                 445

Asp Asp Ala Arg Met Ile Ala Ala Leu Lys Glu Gln Leu Pro Glu Leu
    450                 455                 460

Glu Lys Ile Val Lys Gln Ile Ser Glu Asp Ala Lys Ala Pro Gln Lys
465                 470                 475                 480

Lys His Lys Val Leu Leu Gln Gln Phe Asn Thr Gly Asp Glu Arg Ala
                485                 490                 495

Gln Lys Arg Gln Pro Ile Arg Gly Ser Asp Glu Val Leu Phe Lys Val
            500                 505                 510

Tyr Cys Met Asp His Thr Tyr Thr Thr Ile Arg Val Pro Val Ala Thr
        515                 520                 525

Ser Val Lys Glu Val Ile Ser Ala Val Ala Asp Lys Leu Gly Ser Gly
    530                 535                 540

Glu Gly Leu Ile Ile Val Lys Met Ser Ser Gly Gly Glu Lys Val Val
545                 550                 555                 560

Leu Lys Pro Asn Asp Val Ser Val Phe Thr Thr Leu Thr Ile Asn Gly
                565                 570                 575

Arg Leu Phe Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu Thr Pro Leu
            580                 585                 590
```

```
Pro Glu Gln Glu Gly Pro Thr Val Gly Thr Val Gly Thr Phe Glu Leu
        595                 600                 605

Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Ile Tyr Asp Trp Glu
    610                 615                 620

Leu Phe Asn Cys Val His Glu Leu Glu Leu Ile Tyr His Thr Phe Gly
625                 630                 635                 640

Arg His Asn Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu Phe Leu Arg
                645                 650                 655

Arg Phe Asn Glu Ile Gln Phe Trp Val Val Thr Glu Ile Cys Leu Cys
            660                 665                 670

Ser Gln Leu Ser Lys Arg Val Gln Leu Leu Lys Lys Phe Ile Lys Ile
        675                 680                 685

Ala Ala His Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe Phe Ala Ile
    690                 695                 700

Val Met Gly Leu Ser Asn Ile Ala Val Ser Arg Leu Ala Leu Thr Trp
705                 710                 715                 720

Glu Lys Leu Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu Phe Glu Ser
                725                 730                 735

Leu Met Asp Pro Ser Arg Asn His Arg Ala Tyr Arg Leu Thr Val Ala
            740                 745                 750

Lys Leu Glu Pro Pro Leu Ile Pro Phe Met Pro Leu Leu Ile Lys Asp
        755                 760                 765

Met Thr Phe Thr His Glu Gly Asn Lys Thr Phe Ile Asp Asn Leu Val
    770                 775                 780

Asn Phe Glu Lys Met Arg Met Ile Ala Asn Thr Ala Arg Thr Val Arg
785                 790                 795                 800

Tyr Tyr Arg Ser Gln Pro Phe Asn Pro Asp Ala Ala Gln Ala Asn Lys
                805                 810                 815
```

Asn His Gln Asp Val Arg Ser Tyr Val Arg Gln Leu Asn Val Ile Asp
820 825 830

Asn Gln Arg Thr Leu Ser Gln Met Ser His Arg Leu Glu Pro Arg Arg
835 840 845

Pro

<210> 19
<211> 24
<212> PRT
<213> Caenorhabditis elegans

<400> 19

Phe Val Gln Ala Ser Pro Ser Asp Ile Ser Thr Ser Leu Ser His Ile
1 5 10 15

Asp Tyr Arg Val Leu Ser Arg Ile
20

<210> 20
<211> 43
<212> PRT
<213> Caenorhabditis elegans

<400> 20

Arg Ala Glu Ile Leu Val Lys Phe Val His Val Ala Lys His Leu Arg
1 5 10 15

Lys Ile Asn Asn Phe Asn Thr Leu Met Ser Val Val Gly Gly Ile Thr
20 25 30

His Ser Ser Val Ala Arg Leu Ala Lys Thr Tyr
35 40

<210> 21
<211> 22
<212> PRT
<213> Caenorhabditis elegans

<400> 21

Phe Arg Ile Pro Ile Ile Gly Val His Leu Lys Asp Leu Val Ala Ile
1 5 10 15

Asn Cys Ser Gly Ala Asn
20

<210> 22
<211> 24
<212> PRT
<213> Homo sapiens

<400> 22

Leu His Asp Phe His Ser His Glu Ile Ala Glu Gln Leu Thr Leu Leu
1 5 10 15

Asp Ala Glu Leu Phe Tyr Lys Ile
20

<210> 23
<211> 41
<212> PRT
<213> Homo sapiens

<400> 23

Arg Glu Arg Leu Leu Leu Lys Phe Ile Lys Ile Met Lys His Leu Arg
1 5 10 15

Lys Leu Asn Asn Phe Asn Ser Tyr Leu Ala Ile Leu Ser Ala Leu Asp
20 25 30

Ser Ala Pro Ile Arg Arg Leu Glu Trp
35 40

<210> 24
<211> 22
<212> PRT
<213> Homo sapiens

<400> 24

Pro Cys Ile Pro Tyr Leu Gly Leu Ile Leu Gln Asp Leu Thr Phe Val
1 5 10 15

His Leu Gly Asn Pro Asp
20

<210> 25
<211> 24
<212> PRT

<213> Mus musculus

<400> 25

Leu Leu Asp Ile Asp Pro Tyr Thr Tyr Ala Thr Gln Leu Thr Val Leu
1 5 10 15

Glu His Asp Leu Tyr Leu Arg Ile
20

<210> 26
<211> 43
<212> PRT
<213> Mus musculus

<400> 26

Arg Ser Lys Leu Thr Gln Tyr Phe Val Thr Val Ala Gln His Cys Lys
1 5 10 15

Glu Leu Asn Asn Phe Ser Ser Met Thr Ala Ile Val Ser Ala Leu Tyr
20 25 30

Ser Ser Pro Ile Tyr Arg Leu Lys Lys Thr Trp
35 40

<210> 27
<211> 22
<212> PRT
<213> Mus musculus

<400> 27

Ala Cys Val Pro Phe Phe Gly Val Tyr Leu Ser Asp Leu Thr Phe Thr
1 5 10 15

Phe Val Gly Asn Pro Asp
20

<210> 28
<211> 24
<212> PRT
<213> Rattus rattus

<400> 28

Phe Glu Asn His Ser Ala Met Glu Ile Ala Glu Gln Leu Thr Leu Leu
1 5 10 15

Asp His Leu Val Phe Lys Ser Ile
20

<210> 29
<211> 43
<212> PRT
<213> Rattus rattus

<400> 29

Arg Ala Ser Thr Ile Glu Lys Trp Val Ala Val Ala Asp Ile Cys Arg
1 5 10 15

Cys Leu His Asn Tyr Asn Ala Val Leu Glu Ile Thr Ser Ser Ile Asn
20 25 30

Arg Ser Ala Ile Phe Arg Leu Lys Lys Thr Trp
35 40

<210> 30
<211> 22
<212> PRT
<213> Rattus rattus

<400> 30

Pro Cys Val Pro Tyr Leu Gly Met Tyr Leu Thr Asp Leu Ala Phe Leu
1 5 10 15

Glu Glu Gly Thr Pro Asn
20

<210> 31
<211> 24
<212> PRT
<213> Homo sapiens

<400> 31

Leu Leu Thr Leu His Pro Ile Glu Ile Ala Arg Gln Leu Thr Leu Leu
1 5 10 15

Glu Ser Asp Leu Tyr Arg Ala Val
20

<210> 32
<211> 43
<212> PRT
<213> Homo sapiens

<400> 32

Arg Val Ala Val Val Ser Arg Ile Ile Glu Ile Leu Gln Val Phe Gln
1 5 10 15

Glu Leu Asn Asn Phe Asn Gly Val Leu Glu Val Val Ser Ala Met Asn
20 25 30

Ser Ser Pro Val Tyr Arg Leu Asp Arg Thr Phe
35 40

<210> 33
<211> 23
<212> PRT
<213> Homo sapiens

<400> 33

Pro Pro Cys Val Pro Phe Phe Gly Ile Tyr Leu Thr Asn Ile Leu Lys
1 5 10 15

Thr Glu Glu Gly Asn Pro Glu
20

<210> 34
<211> 24
<212> PRT
<213> Saccharomyces cerevisiae

<400> 34

Ala Leu Asn Val Ser Pro Trp Ser Leu Ala Lys Thr Leu Thr Leu Leu
1 5 10 15

Glu Ser Ser Leu Tyr Leu Asp Ile
20

<210> 35
<211> 43
<212> PRT
<213> Saccharomyces cerevisiae

<400> 35

Gln Thr His Thr Ile Ser Tyr Trp Leu Gln Val Ala Leu Ala Cys Leu
1 5 10 15

Tyr Leu Arg Asn Leu Asn Ser Leu Ala Ser Ile Ile Thr Ser Leu Gln

```
            20                  25                  30

Asn His Ser Ile Glu Arg Leu Ser Leu Pro Ile
        35                  40


<210>  36
<211>  22
<212>  PRT
<213>  Saccharomyces cerevisiae

<400>  36

Pro Cys Val Pro Phe Thr Ser Leu Leu Ile Arg Asp Ile Thr Phe Ile
1               5                   10                  15


Arg Asp Gly Asn Asp Thr
            20


<210>  37
<211>  20
<212>  PRT
<213>  Caenorhabditis elegans

<400>  37

Ala Val Phe Lys His Tyr Asp His Asp Arg Asp Gly Phe Ile Ser Gln
1               5                   10                  15


Glu Glu Phe Gln
            20


<210>  38
<211>  20
<212>  PRT
<213>  Homo sapiens

<400>  38

Glu Ala Phe Ser Leu Phe Asp Lys Asp Gly Asp Gly Thr Ile Thr Thr
1               5                   10                  15


Lys Phe Leu Gly
            20


<210>  39
<211>  20
<212>  PRT
<213>  Homo sapiens
```

<400> 39

Leu Met Leu Lys Leu Phe Asp Ser Asn Asn Asp Gly Lys Leu Glu Leu
1 5 10 15

Thr Glu Met Ala
20

<210> 40
<211> 20
<212> PRT
<213> Homo sapiens

<400> 40

Phe Ala Phe Arg Ile Tyr Asp Met Asp Lys Asp Gly Tyr Ile Ser Asn
1 5 10 15

Gly Glu Leu Phe
20

<210> 41
<211> 20
<212> PRT
<213> Homo sapiens

<400> 41

Lys Val Phe His Met Leu Asp Lys Asp Lys Ser Gly Phe Ile Glu Glu
1 5 10 15

Asp Glu Leu Gly
20

<210> 42
<211> 20
<212> PRT
<213> Homo sapiens

<400> 42

Glu Cys Phe Arg Ile Phe Asp Arg Lys Ala Asp Gly Tyr Ile Asp Pro
1 5 10 15

Glu Glu Leu Ala
20

<210> 43
<211> 50

<212> PRT
<213> Caenorhabditis elegans

<400> 43

His Asn Phe His Glu Thr Thr Phe Leu Thr Pro Thr Thr Cys Asn His
1 5 10 15

Cys Asn Lys Leu Leu Trp Gly Ile Leu Arg Gln Gly Phe Lys Cys Lys
20 25 30

Asp Cys Gly Leu Ala Val His Ser Cys Cys Lys Ser Asn Ala Val Ala
35 40 45

Glu Cys
50

<210> 44
<211> 50
<212> PRT
<213> Homo sapiens

<400> 44

His Lys Phe Ile Ala Arg Phe Phe Lys Gln Pro Thr Phe Cys Ser His
1 5 10 15

Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly Phe Gln Cys Gln
20 25 30

Val Cys Cys Phe Val Val His Lys Arg Cys His Glu Phe Val Thr Phe
35 40 45

Ser Cys
50

<210> 45
<211> 50
<212> PRT
<213> Homo sapiens

<400> 45

His Lys Phe Thr Ala Arg Phe Phe Lys Gln Pro Thr Phe Cys Ser His
1 5 10 15

Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly Phe Gln Cys Gln
20 25 30

Val Cys Cys Phe Val Val His Lys Arg Cys His Glu Phe Val Thr Phe
35 40 45

Ser Cys
50

<210> 46
<211> 50
<212> PRT
<213> Homo sapiens

<400> 46

His Lys Phe Thr Ala Arg Phe Phe Lys Gln Pro Thr Phe Cys Ser His
1 5 10 15

Cys Thr Asp Phe Ile Trp Gly Ile Gly Lys Gln Gly Leu Gln Cys Gln
20 25 30

Val Cys Ser Phe Val Val His Arg Arg Cys His Glu Phe Val Thr Phe
35 40 45

Glu Cys
50

<210> 47
<211> 24
<212> PRT
<213> Caenorhabditis elegans

<400> 47

Leu His Leu Ile Asp Ser Gln Glu Leu Ala His Gln Leu Phe Leu Phe
1 5 10 15

His Leu Gln Leu Leu Arg Ser Thr
20

<210> 48
<211> 43
<212> PRT
<213> Homo sapiens

<400> 48

Arg Val Gln Leu Leu Lys Lys Phe Ile Lys Ile Ala Ala His Cys Lys
1 5 10 15

Glu Tyr Lys Asn Leu Asn Ser Phe Phe Ala Ile Val Met Gly Leu Ser
20 25 30

Asn Ile Ala Val Ser Arg Leu Ala Leu Thr Trp
35 40

<210> 49
<211> 43
<212> PRT
<213> Caenorhabditis elegans

<400> 49

Arg Met Glu Ile Leu Lys Lys Phe Ile Ser Ile Ala Thr Ile Ala Arg
1 5 10 15

Glu Tyr Arg Asp Leu Leu Thr Val Phe Ala Ile Thr Leu Gly Leu Ser
20 25 30

Met Thr Ser Ile Ser Arg Leu Thr Leu Thr Trp
35 40

<210> 50
<211> 22
<212> PRT
<213> Caenorhabditis elegans

<400> 50

Pro Tyr Ile Pro Phe Val Pro Leu Ile Leu Lys Asp Leu Met Phe Ile
1 5 10 15

His Gln Gly Asn Lys Ser
20

<210> 51
<211> 69
<212> PRT
<213> Caenorhabditis elegans

<400> 51

Val Phe Arg Gln Gly Glu Ile Gly Val Tyr Trp Tyr Ile Val Leu Lys
1 5 10 15

Gly Ala Val Glu Val Asn Val Asn Gly Lys Ile Val Cys Leu Leu Arg
20 25 30

```
Glu Gly Asp Asp Phe Gly Lys Leu Ala Leu Val Asn Asp Leu Pro Arg
        35                  40                  45

Ala Ala Thr Ile Val Thr Tyr Glu Asp Asp Ser Met Phe Leu Val Val
    50                  55                  60

Asp Lys His His Phe
65
```

<210> 52
<211> 67
<212> PRT
<213> Homo sapiens

<400> 52

```
Val Ile Gln Gln Gly Asp Glu Gly Asp Asn Phe Tyr Val Ile Asp Gln
1               5                   10                  15

Gly Glu Thr Asp Val Tyr Val Asn Asn Glu Trp Ala Thr Val Gly Glu
            20                  25                  30

Gly Gly Ser Phe Gly Glu Leu Ala Leu Ile Tyr Gly Thr Pro Arg Ala
        35                  40                  45

Ala Thr Val Lys Ala Lys Thr Asn Val Lys Leu Trp Gly Ile Asp Arg
    50                  55                  60

Asp Ser Tyr
65
```

<210> 53
<211> 71
<212> PRT
<213> Homo sapiens

<400> 53

```
Val Ile Asp Gln Gly Asp Asp Gly Asp Asn Phe Tyr Val Ile Glu Arg
1               5                   10                  15

Gly Thr Tyr Asp Ile Leu Val Thr Lys Asp Asn Gln Thr Arg Val Gly
            20                  25                  30

Gln Tyr Asp Asn Arg Gly Ser Phe Gly Glu Leu Ala Leu Met Tyr Asn
```

35 40 45

Thr Pro Arg Ala Ala Thr Ile Val Ala Thr Ser Glu Gly Ser Leu Trp
50 55 60

Gly Leu Asp Arg Val Thr Phe
65 70

<210> 54
<211> 73
<212> PRT
<213> Homo sapiens

<400> 54

Ile Val Val Gln Gly Glu Pro Gly Asp Glu Phe Phe Ile Ile Leu Glu
1 5 10 15

Gly Ser Ala Ala Val Leu Gln Arg Arg Ser Glu Asn Glu Glu Phe Val
20 25 30

Val Gly Arg Leu Gly Pro Ser Asp Tyr Phe Gly Glu Ile Ala Leu Leu
35 40 45

Met Asn Arg Pro Arg Ala Ala Thr Val Val Ala Arg Gly Pro Leu Lys
50 55 60

Cys Val Lys Leu Asp Arg Pro Arg Phe
65 70

<210> 55
<211> 79
<212> PRT
<213> Homo sapiens

<400> 55

Ile Ile Thr Gln Gly Glu Lys Ala Asp Ser Phe Tyr Ile Ile Glu Ser
1 5 10 15

Gly Glu Val Ser Ile Leu Ile Arg Ser Arg Thr Lys Ser Asn Lys Asp
20 25 30

Gly Gly Asn Gln Glu Val Glu Ile Ala Arg His Lys Gly Gln Tyr Phe
35 40 45

```
Gly Glu Leu Ala Leu Val Thr Asn Lys Pro Arg Ala Ala Ser Ala Tyr
    50                  55                  60

Ala Val Gly Asp Val Lys Cys Leu Val Met Asp Val Gln Ala Phe
65                  70                  75

<210>  56
<211>  67
<212>  PRT
<213>  Homo sapiens

<400>  56

Ile Ile Lys Glu Gly Asp Val Gly Ser Leu Val Tyr Val Met Glu Asp
1               5                   10                  15

Gly Lys Val Glu Val Thr Lys Glu Gly Val Lys Cys Thr Met Gly Pro
            20                  25                  30

Gly Lys Val Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg Thr
        35                  40                  45

Ala Thr Val Lys Thr Leu Val Asn Val Lys Leu Trp Ala Ile Asp Arg
    50                  55                  60

Gln Cys Phe
65

<210>  57
<211>  67
<212>  PRT
<213>  Homo sapiens

<400>  57

Ile Ile Lys Glu Gly Asp Val Gly Ser Leu Val Tyr Val Met Glu Asp
1               5                   10                  15

Gly Lys Val Glu Val Thr Lys Glu Gly Val Lys Cys Thr Met Gly Pro
            20                  25                  30

Gly Lys Val Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg Thr
        35                  40                  45

Ala Thr Val Lys Thr Leu Val Asn Val Lys Leu Trp Ala Ile Asp Arg
    50                  55                  60
```

Gln Cys Phe
65

<210> 58
<211> 67
<212> PRT
<213> Homo sapiens

<400> 58

Ile Ile Lys Gln Gly Glu Pro Gly Asn His Ile Phe Val Leu Ala Glu
1 5 10 15

Gly Arg Leu Glu Val Phe Gln Gly Lys Leu Leu Ser Ser Ile Pro Met
20 25 30

Trp Thr Thr Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg Thr
35 40 45

Ala Ser Val Lys Ala Ile Thr Asn Val Lys Thr Trp Ala Leu Asp Arg
50 55 60

Glu Val Phe
65

<210> 59
<211> 1011
<212> PRT
<213> Homo sapiens

<400> 59

Met Val Ala Ala His Ala Ala His Ser Ser Ser Ser Ala Glu Trp Ile
1 5 10 15

Ala Cys Leu Asp Lys Arg Pro Leu Glu Arg Ser Ser Glu Asp Val Asp
20 25 30

Ile Ile Phe Thr Arg Leu Lys Glu Val Lys Ala Phe Glu Lys Phe His
35 40 45

Pro Asn Leu Leu His Gln Ile Cys Leu Cys Gly Tyr Tyr Glu Asn Leu
50 55 60

Glu Lys Gly Ile Thr Leu Phe Arg Gln Gly Asp Ile Gly Thr Asn Trp
65 70 75 80

```
Tyr Ala Val Leu Ala Gly Ser Leu Asp Val Lys Val Ser Glu Thr Ser
                85                  90                  95

Ser His Gln Asp Ala Val Thr Ile Cys Thr Leu Gly Ile Gly Thr Ala
            100                 105                 110

Phe Gly Glu Ser Ile Leu Asp Asn Thr Pro Arg His Ala Thr Ile Val
        115                 120                 125

Thr Arg Glu Ser Ser Glu Leu Leu Arg Ile Glu Gln Lys Asp Phe Lys
    130                 135                 140

Ala Leu Trp Glu Lys Tyr Arg Gln Tyr Met Ala Gly Leu Leu Ala Pro
145                 150                 155                 160

Pro Tyr Gly Val Met Glu Thr Gly Ser Asn Asn Asp Arg Ile Pro Asp
                165                 170                 175

Lys Glu Asn Thr Pro Leu Ile Glu Pro His Val Pro Leu Arg Pro Ala
            180                 185                 190

Asn Thr Ile Thr Lys Val Pro Ser Glu Lys Ile Leu Arg Ala Gly Lys
        195                 200                 205

Ile Leu Arg Asn Ala Ile Leu Ser Arg Ala Pro His Met Ile Arg Asp
    210                 215                 220

Arg Lys Tyr His Leu Lys Thr Tyr Arg Gln Cys Cys Val Gly Thr Glu
225                 230                 235                 240

Leu Val Asp Trp Met Met Gln Gln Thr Pro Cys Val His Ser Arg Thr
                245                 250                 255

Gln Ala Val Gly Met Trp Gln Val Leu Leu Glu Asp Gly Val Leu Asn
            260                 265                 270

His Val Asp Gln Glu His His Phe Gln Asp Lys Tyr Leu Phe Tyr Arg
        275                 280                 285

Phe Leu Asp Asp Glu His Glu Asp Ala Pro Leu Pro Thr Glu Glu Glu
    290                 295                 300
```

```
Lys Lys Glu Cys Asp Glu Glu Leu Gln Asp Thr Met Leu Leu Leu Ser
305                 310                 315                 320

Gln Met Gly Pro Asp Ala His Met Arg Met Ile Leu Arg Lys Pro Pro
                325                 330                 335

Gly Gln Arg Thr Val Asp Asp Leu Glu Ile Ile Tyr Glu Glu Leu Leu
            340                 345                 350

His Ile Lys Ala Leu Ser His Leu Ser Thr Thr Val Lys Arg Glu Leu
        355                 360                 365

Ala Gly Val Leu Ile Phe Glu Ser His Ala Lys Gly Gly Thr Val Leu
    370                 375                 380

Phe Asn Gln Gly Glu Glu Gly Thr Ser Trp Tyr Ile Ile Leu Lys Gly
385                 390                 395                 400

Ser Val Asn Val Val Ile Tyr Gly Lys Gly Val Val Cys Thr Leu His
                405                 410                 415

Glu Gly Asp Asp Phe Gly Lys Leu Ala Leu Val Asn Asp Ala Pro Arg
            420                 425                 430

Ala Ala Ser Ile Val Leu Arg Glu Asp Asn Cys His Phe Leu Arg Val
        435                 440                 445

Asp Lys Glu Asp Phe Asn Arg Ile Leu Arg Asp Val Glu Ala Asn Thr
    450                 455                 460

Val Arg Leu Lys Glu His Asp Gln Asp Val Leu Val Leu Glu Lys Val
465                 470                 475                 480

Pro Ala Gly Asn Arg Ala Ser Asn Gln Gly Asn Ser Gln Pro Gln Gln
                485                 490                 495

Lys Tyr Thr Val Met Ser Gly Thr Pro Glu Lys Ile Leu Glu His Phe
            500                 505                 510

Leu Glu Thr Ile Arg Leu Glu Ala Thr Leu Asn Glu Ala Thr Asp Ser
        515                 520                 525
```

```
Val Leu Asn Asp Phe Ile Met Met His Cys Val Phe Met Pro Asn Thr
    530                 535                 540

Gln Leu Cys Pro Ala Leu Val Ala His Tyr His Ala Gln Pro Ser Gln
545                 550                 555                 560

Gly Thr Glu Gln Glu Lys Met Asp Tyr Ala Leu Asn Asn Lys Arg Arg
                565                 570                 575

Val Ile Arg Leu Val Leu Gln Trp Ala Ala Met Tyr Gly Asp Leu Leu
            580                 585                 590

Gln Glu Asp Asp Val Ser Met Ala Phe Leu Glu Glu Phe Tyr Val Ser
        595                 600                 605

Val Ser Asp Asp Ala Arg Met Ile Ala Ala Leu Lys Glu Gln Leu Pro
    610                 615                 620

Glu Leu Glu Lys Ile Val Lys Gln Ile Ser Glu Asp Ala Lys Ala Pro
625                 630                 635                 640

Gln Lys Lys His Lys Val Leu Leu Gln Gln Phe Asn Thr Gly Asp Glu
                645                 650                 655

Arg Ala Gln Lys Arg Gln Pro Ile Arg Gly Ser Asp Glu Val Leu Phe
            660                 665                 670

Lys Val Tyr Cys Met Asp His Thr Tyr Thr Thr Ile Arg Val Pro Val
        675                 680                 685

Ala Thr Ser Val Lys Glu Val Ile Ser Ala Val Ala Asp Lys Leu Gly
    690                 695                 700

Ser Gly Glu Gly Leu Ile Ile Val Lys Met Ser Ser Gly Gly Glu Lys
705                 710                 715                 720

Val Val Leu Lys Pro Asn Asp Val Ser Val Phe Thr Thr Leu Thr Ile
                725                 730                 735

Asn Gly Arg Leu Phe Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu Thr
            740                 745                 750

Pro Leu Pro Glu Gln Glu Gly Pro Thr Val Gly Thr Val Gly Thr Phe
```

```
        755                 760                 765

Glu Leu Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Ile Tyr Asp
    770                 775                 780

Trp Glu Leu Phe Asn Cys Val His Glu Leu Glu Leu Ile Tyr His Thr
785                 790                 795                 800

Phe Gly Arg His Asn Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu Phe
                805                 810                 815

Leu Arg Arg Phe Asn Glu Ile Gln Phe Trp Val Val Thr Glu Ile Cys
            820                 825                 830

Leu Cys Ser Gln Leu Ser Lys Arg Val Gln Leu Leu Lys Lys Phe Ile
        835                 840                 845

Lys Ile Ala Ala His Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe Phe
    850                 855                 860

Ala Ile Val Met Gly Leu Ser Asn Ile Ala Val Ser Arg Leu Ala Leu
865                 870                 875                 880

Thr Trp Glu Lys Leu Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu Phe
                885                 890                 895

Glu Ser Leu Met Asp Pro Ser Arg Asn His Arg Ala Tyr Arg Leu Thr
            900                 905                 910

Val Ala Lys Leu Glu Pro Pro Leu Ile Pro Phe Met Pro Leu Leu Ile
        915                 920                 925

Lys Asp Met Thr Phe Thr His Glu Gly Asn Lys Thr Phe Ile Asp Asn
    930                 935                 940

Leu Val Asn Phe Glu Lys Met Arg Met Ile Ala Asn Thr Ala Arg Thr
945                 950                 955                 960

Val Arg Tyr Tyr Arg Ser Gln Pro Phe Asn Pro Asp Ala Ala Gln Ala
                965                 970                 975

Asn Lys Asn His Gln Asp Val Arg Ser Tyr Val Arg Gln Leu Asn Val
            980                 985                 990
```

```
Ile Asp Asn Gln Arg Thr Leu Ser  Gln Met Ser His Arg  Leu Glu Pro
        995                 1000                1005


Arg Arg  Pro
    1010
```

<210> 60
<211> 20
<212> PRT
<213> Homo sapiens

<400> 60

```
Ser Val Phe Lys Asn Tyr Asp His Asp Gln Asp Gly Tyr Ile Ser Gln
1               5                   10                  15


Glu Glu Phe Glu
            20
```

<210> 61
<211> 50
<212> PRT
<213> Homo sapiens

<400> 61

```
His Asn Phe Gln Glu Thr Thr Tyr Leu Lys Pro Thr Phe Cys Asp Asn
1               5                   10                  15


Cys Ala Gly Phe Leu Trp Gly Val Ile Lys Gln Gly Tyr Arg Cys Lys
            20                  25                  30


Asp Cys Gly Met Asn Cys His Lys Gln Cys Lys Asp Leu Val Val Phe
        35                  40                  45


Glu Cys
    50
```

<210> 62
<211> 24
<212> PRT
<213> Rattus norvegicus

<400> 62

```
Phe Glu Leu Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Thr Tyr
1               5                   10                  15
```

Asp Trp Glu Leu Phe Asn Cys Val
20

<210> 63
<211> 24
<212> PRT
<213> Homo sapiens

<400> 63

Phe Asp His Leu Glu Pro Glu Glu Leu Ser Glu His Phe Thr Tyr Leu
1 5 10 15

Glu Phe Lys Ser Phe Arg Arg Ile
20

<210> 64
<211> 43
<212> PRT
<213> Rattus norvegicus

<400> 64

Arg Val Gln Leu Leu Lys Lys Cys Ile Lys Ile Ala Ala His Cys Lys
1 5 10 15

Glu Tyr Lys Asn Leu Asn Ser Phe Phe Gly Ile Val Met Gly Leu Ser
20 25 30

Asn Val Ala Glu Ser Arg Leu Ala Leu Thr Trp
35 40

<210> 65
<211> 43
<212> PRT
<213> Homo sapiens

<400> 65

Arg Ala Glu Val Phe Ile Lys Phe Ile Gln Val Ala Gln Lys Leu His
1 5 10 15

Gln Leu Gln Asn Phe Asn Thr Leu Met Ala Val Ile Gly Gly Leu Cys
20 25 30

His Ser Ser Ile Ser Arg Leu Lys Glu Thr Ser
35 40

<210> 66
<211> 22
<212> PRT
<213> Rattus norvegicus

<400> 66

Pro Leu Ile Pro Phe Met Pro Leu Leu Ile Lys Asp Met Thr Phe Thr
1 5 10 15

His Glu Gly Asn Lys Thr
20

<210> 67
<211> 22
<212> PRT
<213> Homo sapiens

<400> 67

Phe Lys Ile Pro Ile Leu Gly Val His Leu Lys Asp Leu Ile Ser Leu
1 5 10 15

Tyr Glu Ala Met Pro Asp
20